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Statewide Health Coordinating Council
State Health Planning and Development Agency
Department of Social Services

MISSOURI
STATE HEALTH PLAN

1979 EDITION

STATEWIDE HEALTH COORDINATING COUNCIL
STATE HEALTH PLANNING AND DEVELOPMENT AGENCY
DEPARTMENT OF SOCIAL SERVICES

"IT IS SAID THAT WE FACE A CRISIS IN MEDICINE TODAY. . .
WHEN THE CHINESE WRITE THE WORD "CRISIS," THEY DO SO
IN TWO CHARACTERS, ONE MEANING DANGER, THE OTHER,
OPPORTUNITY."

JOHN ROMANO, M.D.
JOURNAL OF THE AMERICAN MEDICAL
ASSOCIATION (OCTOBER 26, 1964)



JOSEPH P. TEASDALE
Governor

STATE OF MISSOURI
DEPARTMENT OF SOCIAL SERVICES
STATE HEALTH PLANNING AND DEVELOPMENT AGENCY
BROADWAY STATE OFFICE BUILDING
P.O. BOX 88
JEFFERSON CITY, MISSOURI 65103

(314) 751-2055

DAVID R. FREEMAN
Director
Department of Social Services

HENRY MANDRO
Director
State Health Planning
and Development Agency

Dear Friend:

The Missouri Statewide Health Coordinating Council is pleased to present the second Missouri State Health Plan. The Plan represents many months of hard work by dedicated volunteers and the staff of the Missouri State Health Planning and Development Agency.

Many groups and individuals were involved in the development of the State Health Plan. The Plan Development Committee of the Statewide Health Coordinating Council reviewed the preliminary plan at every stage of its development and conducted a public hearing on the completed draft. Over 1,000 copies of the draft plan and/or summary were distributed for comment. Based on its review of the draft as well as the public comments received, the Committee made recommendations for modification to the full Council, which adopted the plan at its June 15, 1979 meeting.

It is our desire that this plan be viewed as establishing policies, that is direction, for use in the future development of the health and medical care systems in our state. The ideas presented are not static but should be seen as our observation of the "best" alternatives to a given issue. Throughout the next year and in the years to follow our efforts will be directed toward the development of an increasingly comprehensive document.

Your assistance, ideas, and guidance are always solicited and appreciated. I encourage you to call us and become involved in planning as a tool to help better the health care system.

Sincerely,

Haywood Snipes

Haywood Snipes
Acting Chairperson
Statewide Health Coordinating Council

HS/bbh

REPORT OF THE DIRECTOR

In January, 1975, President Ford signed into law the National Health Planning and Resources Development Act. This act created new and more comprehensive health planning agencies at state as well as local levels. The law was designed to improve health by increasing accessibility, acceptability, continuity, and quality of health services while restraining increases in the cost of providing those services. Such things as duplication, fragmentation, and lack of coordination of health resources were to be curtailed.

In order to accomplish these things, various related organizational entities were established. At the federal level, the National Council on Health Planning and Development was created. States developed Health Coordinating Councils made up of consumers and providers of health care services. A State Health Planning and Development Agency was put into place to provide staff support to the Councils and also produce a State Health Plan, State Medical Facilities Plan, and administer a Certificate of Need program. Finally, Health Systems Agencies were organized at the local level in states to produce Health Systems Plans, Annual Implementation Plans, and conduct reviews on health projects. These agencies were to have a board of directors from the community they served made up of a majority of consumers.

It is within this framework that the Missouri State Health Planning and Development Agency operates as part of the Department of Social Services. A well-educated and experienced staff carries out its mandate. A 1979 State Health Plan has been produced through an involved local, state, and federal planning process. Throughout the planning process, effort is made to incorporate the best thinking available in the state of Missouri. As a result, the Plan represents a health policy direction which benefits all Missourians.

At the same time, a number of major initiatives were pursued to realize the objectives of our State Health Plan. Improved care for the elderly by way of focusing on the aged within the Department of Social Services was achieved. A nursing home reform bill was enacted to insure better health care for the elderly. Health education and promotion efforts were intensified by greater coordination at the state level. The 550 school districts were provided guidance through materials showing them "how to do it" in their areas. Primary health care was stressed, especially in medically underserved areas of Missouri. Through the Governor's Task Force on Rural Health, a number of changes have occurred which will advance this effort.

Certificate of Need legislation (House Bill 222, SCS) passed during this legislative session. This bill is aimed at containing unnecessary capital expenditures for health. Unfortunately, the bill does not meet federal minimum standards and would not effectively achieve its purpose of saving Missourians their health dollars.

A great deal of this work could not be accomplished without good staff, dedicated volunteers, and cooperative efforts among state agencies, Health Systems Agencies, and the public at large. Future progress will depend on the continuing partnership of everyone involved. The Statewide Health Coordinating Council and the State Health Planning and Development Agency will strive to serve the citizens of Missouri as a coalition of shared interests based on each other's mutual trust.



Henry Mandro, Director

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Jacqueline Wessel, Health Planner
Thomas Lange, Health Planner
Bernadette Houchens, Clerk Typist
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Steve Lyddon, Health Planner
Mary Jean Remmert,* Project Review Specialist
Dena Hagenhoff,* Clerk Stenographer

* Past Member

P. L. 93-641 - THE NATIONAL HEALTH PLANNING AND RESOURCES DEVELOPMENT ACT

This law, passed in 1974, created a nationwide network of health planning agencies. The Health Systems Agencies, the State Health Planning and Development Agency, and the Statewide Health Coordinating Council were all formed as a result of this legislation. Other stipulations of the law are the development of Health Systems Plans and the enactment of Certificate of Need programs in each state. The law has two Titles (sections).

TITLE XV - Established the structure and function of the National Health Planning and Resources Development program.

TITLE XVI - Replaces the Bill-Burton Program (see Table 1).

SHCC - STATEWIDE HEALTH COORDINATING COUNCIL

A consumer majority statewide body appointed by the governor which carries out health planning functions as mandated by P.L. 93-641. Sixty percent of its membership is recommended by the Health Systems Agencies and forty percent of the council is composed of members at large. Among the duties of the SHCC is the preparation of the State Health Plan (see Table i).

SHPDA - STATE HEALTH PLANNING AND DEVELOPMENT AGENCY

This agency is responsible for statewide planning under P.L. 93-641. The agency also administers the Certificate of Need program. The agency is staff to the Statewide Health Coordinating Council and assists the Health Systems Agencies in their planning functions (see Table i).

HSA - HEALTH SYSTEMS AGENCY

Area I HSA (Mid-America Health Systems Agency)

Agency Office - Kansas City

Area II HSA

Agency Office - Moberly

Area III HSA (Greater St. Louis Health Systems Agency)

Agency Office - St. Louis

Area IV HSA (Southwest Missouri Health Systems Agency)

Agency Office - Springfield

Area V HSA

Agency Office - Poplar Bluff

PSRO - PROFESSIONAL STANDARDS REVIEW ORGANIZATIONS

These were created as a provision of Title XI of the Social Security Act in 1972. These organizations are established within states for review of the services provided under the Medicare, Medicaid, and Maternal and Child Health Programs. The reviews are designed to be attentive to problems of cost, quality control, and medical necessity.

DHEW - DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

A Department in the Federal Government. Among its operating agencies are the Public Health Service and the Social Security Administration.

RPC(s) - REGIONAL PLANNING COMMISSIONS

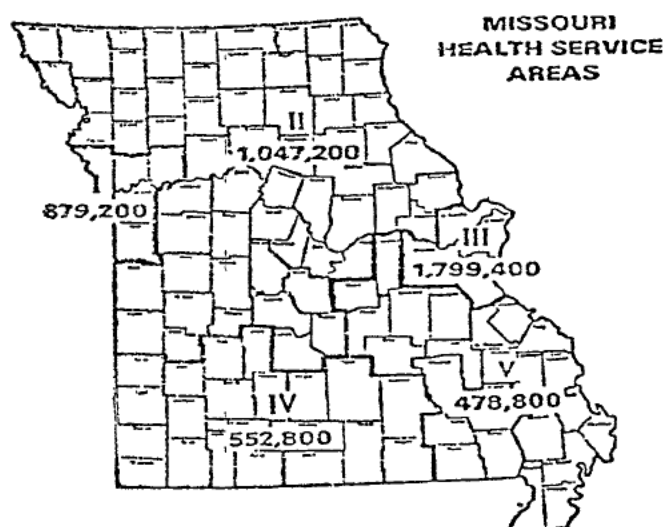
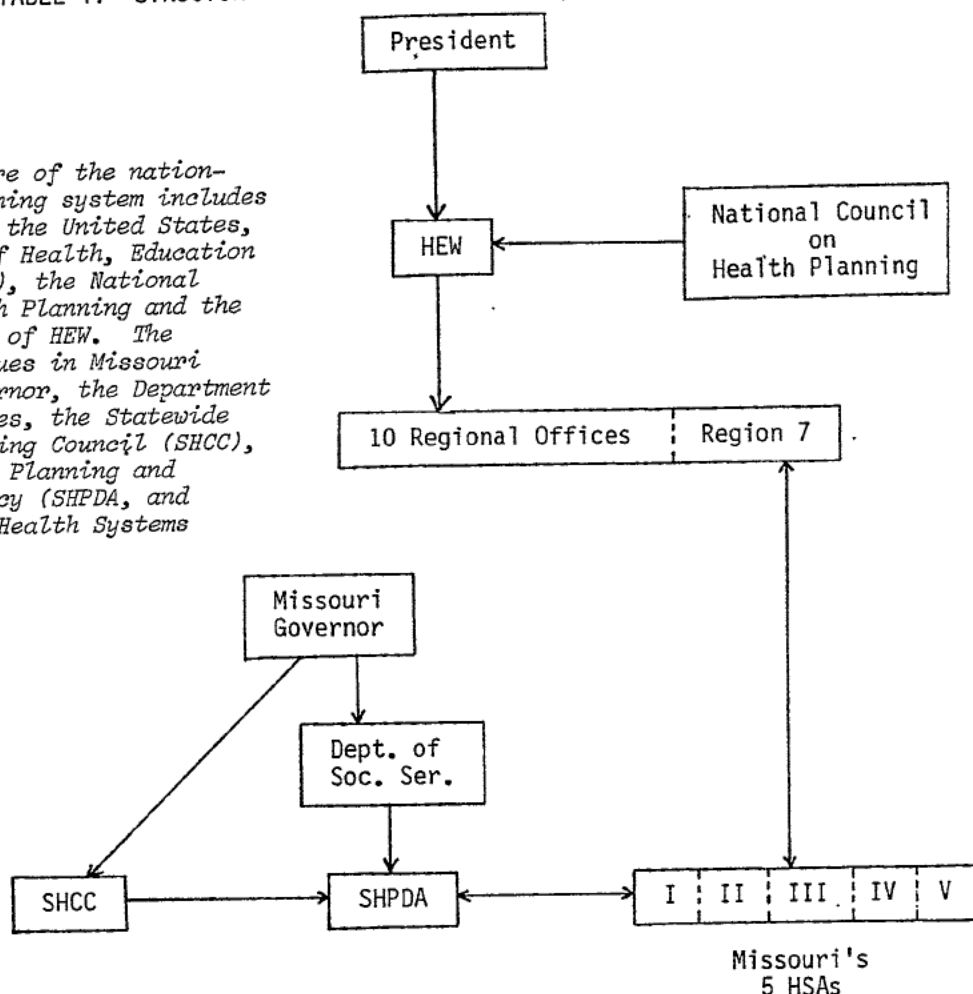
Missouri is served by 20 Regional Planning Commissions. They were formed in 1966 under R.S.Mo 251. The Commissions are made up of local units of government that join together voluntarily to provide services on a regional basis that each local unit would be unable to provide by itself. These Commissions are also required to do comprehensive planning. By law, they are only advisory bodies that have no governing, taxing, or regulating authority.

CON - CERTIFICATE OF NEED

A program whose adoption by states is mandated by P.L. 93-641 which requires the issuance of a certificate of need to a health care facility that proposes to: (a) construct or modify the facility; (b) alter its services; or (c) purchase major equipment the cost of which exceed \$150,000. Its purpose is to control costs by preventing duplicative or excessive health facilities or services.

TABLE i: STRUCTURE OF HEALTH PLANNING SYSTEM

The structure of the nationwide health planning system includes the President of the United States, the Department of Health, Education and Welfare (HEW), the National Council on Health Planning and the Regional Offices of HEW. The structure continues in Missouri through the Governor, the Department of Social Services, the Statewide Health Coordinating Council (SHCC), the State Health Planning and Development Agency (SHPDA), and the independent Health Systems Agencies (HSAs).



There are five HSAs in Missouri covering the five Health Service Areas of the state. The HSAs are the most basic element in the national health planning system. The five HSAs are: Region I, Mid-America Health Systems Agency; Region II, Area II Health Systems Agency; Region III, Greater St. Louis HSA; Region IV, Southwest Missouri Health Systems Agency; and Region V, Missouri Area V HSA Council, Inc.. The numbers represent population statistics for each area.

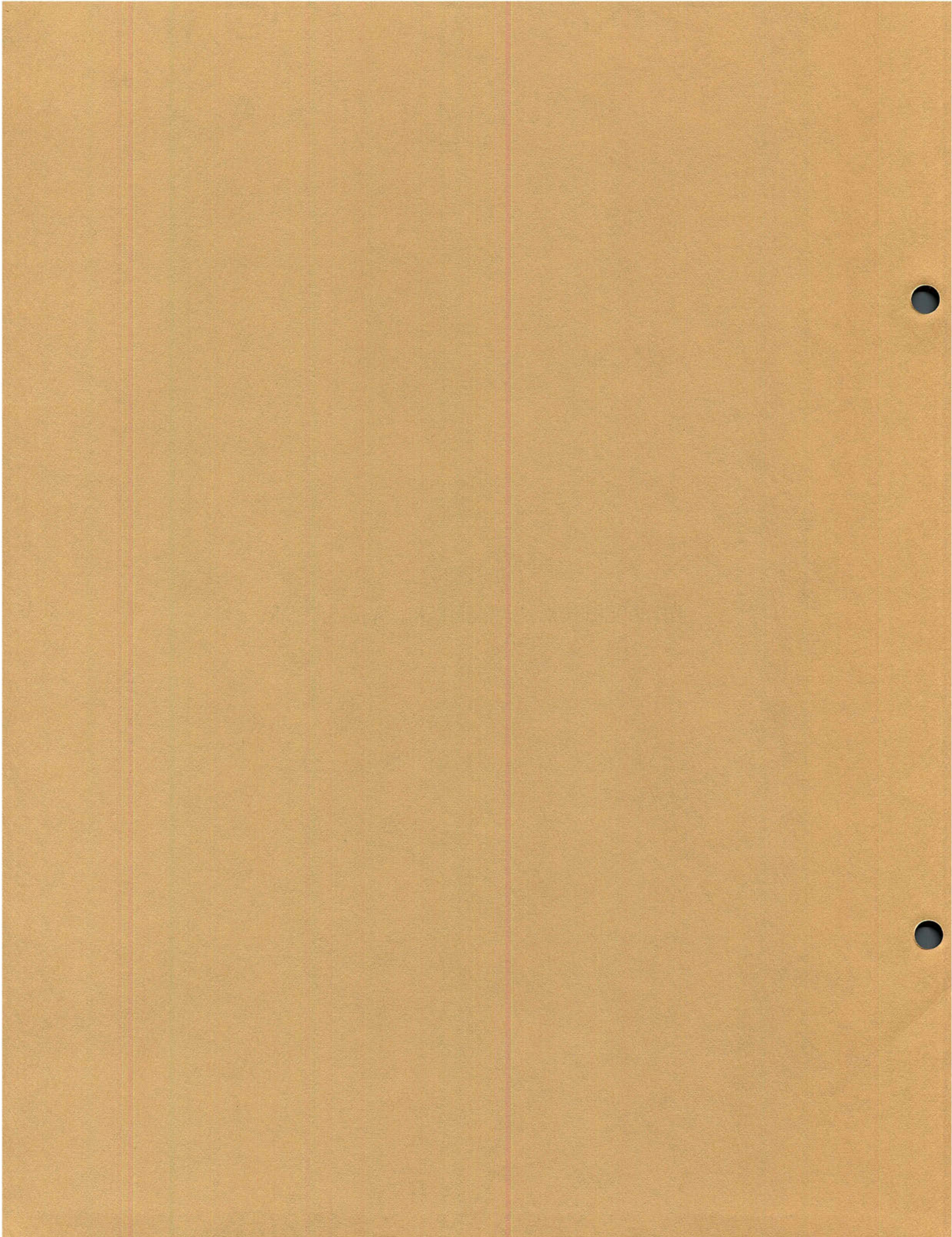
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CHAPTER 1
INTRODUCTION, BACKGROUND, AND SUMMARY



OVERVIEW

The Concept and Determinants of Health

Ensuring a generally high level of health has become one of the pre-eminent social goals of this country and of Missouri. In its constitutional commitment to promote the 'general welfare' of the populace, Missouri recognizes that good health is a fundamental requirement of the quality of life which its citizens desire and can attain.

On examining the status of health and of health care delivery today, the necessity for a broader, dynamic concept of health has emerged. No longer is health care merely the provision of care for an illness or disease. Rather, the individual's social and mental, as well as physical needs, play an ever increasing role in determining his/her level of health.

Acceptance of this broader view of health and disease (i.e., health is more than merely the absence of disease and illness) leads to a broader view of the functions of the health care system. "A health care system must include approaches to both individuals and populations."¹ The health care system should, therefore, embrace an ecological or holistic approach. In designing health strategies which utilize this approach, we must look beyond the symptoms to the determinants of disease. The system, then, should seek to affect the entire range of factors, including medical care, which contributes to the health of individuals and the population as a whole.

In 1974, the Canadian Minister of Health and Welfare, Marc Lalonde, proposed a conceptual framework called the 'Health Field Concept' within which the determinants of health can be studied from a policy perspective.² The 'Health Field Concept' assumes that health is a function of four determinants: life style, environment, heredity, and the health care system.

It has been known for some time that behavior patterns such as cigarette smoking, over eating, lack of exercise, high stress occupations, and excessive consumption of alcohol have negative effects on health. In spite of this awareness, however, only relatively small advances in the reduction of these self-imposed risks have been made. Indeed, only a few studies have been attempted which identify specific health promoting activities. We understand life style is a key factor; however, we know more about health threatening than health enhancing habits.

The environmental hazards to well-being are largely manmade and are the result of urbanization, industrialization, population increases, and the continued expansion of technology.³ Perhaps the most widely known consequence of environmental contamination is cancer. The incidence of cancer has risen rapidly since the early part of this century. Presently, it is the cause of death six times more often than in 1900. In addition, environmental factors may interact with genetic and life style factors in a way that is deadly, yet difficult to trace to a specific determinant.

By examining all four components of health we can gain a better understanding of the causes of contemporary illnesses. More importantly, we can identify what actions need to be initiated to remove or reduce the causes, and also, who should initiate them. By developing strategies aimed at the prevention and early detection of illness, society can best hope to lessen premature mortality and morbidity and thus protect its investment in human capital.

The Current Approach to Health

The vast growth in resources devoted to health care is striking testimony of the growing social commitment to health in this country. Indeed, from 1960 to 1976 national health expenditures increased by over 500 percent. The policies of government, the emphasis on the training of health professionals, and the behavior of individuals tend to reflect the orientation that the level of health has been synonymous with the level of medical care through the diagnosis and treatment of illness and disease.

As expenditures for health care have consumed an ever increasing portion of society's scarce resources, the strategy to secure health has come under criticism, not for what is being done in medicine, but rather for changes that aren't being made in the areas of life style and the environment. Future expenditures intended to improve health must undergo an evaluation based on two important and related questions:

1. What are the benefits to society in terms of improved health status? and
2. Can society afford the costs of this approach?

In general, there is a high degree of public confidence in the delivery of medical care. This is understandable in light of the advances that have been made in the field of medicine.

The application of medical knowledge has been notably successful in the control of serious infectious diseases. With the development of vaccines and antibiotics as effective preventive and therapeutic interventions, the once dreaded diseases of smallpox, tuberculosis, and polio have been virtually eliminated. Over the years, biomedical research has increased the variety and sophistication of methods to diagnose and treat even the most exotic illnesses. The vast array of medical technology routinely available in modern hospitals is often viewed as further testimony of the health care system's capability to solve our health problems. As a consequence, increasing reliance has been placed on the medical care system as the prime mover in promoting society's well-being. The wisdom of this singular reliance is now being challenged.

Recently, an assessment of the nation's health and health care delivery system by Congress and the President, as well as the major professional associations and the nation's consumers, has tended to support the idea that society must begin to allocate more resources to other

determinants of health. This becomes increasingly necessary if we are to achieve our priorities within reasonable cost constraints. The challenge is to establish policies which will guide public and private efforts toward a more balanced approach to our complex health priorities.

An important factor influencing this shift in attitude has been the recognition of medicine's limitations in dealing with the major contemporary illnesses. The decline of man's age-old health enemies has been accompanied by an increased incidence of the so-called 'ills of affluence'. Heart disease, cancer, accidents, and various chronic diseases now constitute the leading causes of death and disability in this country. These illnesses have not, however, readily yielded to reduction through medical intervention.

The nature of chronic disease differs, for example, from the serious health problems of the past. The certainty of a specific causative agent, such as a bacterial strain, is not present in these degenerative diseases. Rather, they arise from a variety of factors, few of which can be readily controlled by medical care practitioners. Medical knowledge has been able to lessen the physical pain and in some cases forestall the progression of the disease, representing an important and needed contribution. However, a meaningful reduction in the incidence of today's 'leading killers' will probably only occur if we focus more energy on their underlying causes. Moreover, a multifaceted approach may significantly reduce the personal and financial expense often associated with after-the-fact treatment of disease.

Economic Characteristics of the Health Care Market

Planning may be a desirable alternative to governmental regulation for those sectors of the economy where the market does not attain equilibrium on its own. From an economic point of view, the health care industry operates within a series of legislated and historically developed exceptions to the basic competitive model. Although many of the exceptions have benefit for the consumer, the exceptions remain significant for planned intervention. First, the profit motive, which underlies most of the country's economic activity, is largely absent in the industry. Without regard for the merits or justification of this fact, institutions under voluntary control receive special financial privileges and, generally, are highly regarded for not making a profit. It is often said, however, that organizations which need to only 'break even' (i.e., not-for-profit health care institutions) can lose the incentive to operate efficiently and effectively.

A second factor is the prevalence of third-party financing. This aspect of the sector diminishes the influence of price on consumption, which may in turn lead to incentives for over-utilization. Indeed, once insured, consumers are apt to regard the price of services at the point of consumption as free, thereby removing one important factor in a competitive market determination of demand.

A third factor is the industry's restriction on pure competition. Specifically in the health care sector, many direct delivery organizations enjoy a natural monopoly due to geography, to maldistribution, and/or to population density. Given that prices are set by individual providers and institutions, there can be a tendency toward price discrimination, i.e., varying fees with the income of patients. Another variation of the health care industry from competitive theory is in the area of price competition. In medical practice, the use of price as a competitive instrument is considered unethical.

Competition further stipulates that for the market to function properly, consumers of the product must be well-informed and must be aware of the effects of the sale. In fact, very few industries could be named where the consumer is more dependent on the producer for information concerning the product. Frequently, the emergent consumer is in no position to shop for the 'best buy,' but rather must take that care which is available and prescribed.

As a result of this discussion, the consensus is that intervention through planning may be desirable to assist the health care system in improving its efficiency and effectiveness in identifying and then meeting the health needs of the population.

1.100 STATUTORY AUTHORITYPublic Law 93-641

The National Health Planning and Resources Development Act of 1974 was signed by the President on January 4, 1975. Section 1523 (a) of this Act requires that the Missouri State Health Planning and Development Agency (SHPDA):

1. Conduct the health planning activities of the State and implement those parts of the State Health Plan (under Section 1524 (c)(2) and the plans of the health systems agencies within the State which relate to the government of the State.
2. Prepare and review and revise as necessary (but at least annually) a preliminary State Health Plan which shall be made up of the Health Systems Plans (HSP's) of the health systems agencies within the State. Such preliminary plans may, as found necessary by the State agency, contain such revisions of such HSP's to achieve their appropriate coordination or to deal more effectively with Statewide health needs. Such preliminary plans shall be submitted to the Statewide Health Coordinating Council of the State for approval or disapproval and for use in developing the State Health Plan referred to in Section 1524(c).

Section 1524(c) of the Act requires that the Statewide Health Coordinating Council (SHCC):

(2)(A) Prepare, review, and revise as necessary (but at least annually) a State Health Plan which shall be made up of the HSP's of the health systems agencies within the State. Such plan may, as found necessary by the SHCC, contain revisions of such HSP's to achieve their appropriate coordination or to deal more effectively with statewide health needs. Each health systems agency which participates in the SHCC shall make available to the SHCC its HSP for each year for integration into the State Health Plan and shall, as required by the SHCC, revise its HSP to achieve appropriate coordination with the HSP's of the other agencies which participate in the SHCC or to deal more effectively with statewide health needs.

(B) In the preparation and revision of the State Health Plan, the SHCC shall review and consider the preliminary State Health Plan submitted by the State agency under Section 1523(a)(2), and shall conduct a public hearing on the plan as proposed and shall give interested persons an opportunity to submit their views orally and in writing. Not less than thirty days prior to any such hearings, the SHCC shall publish in at least two newspapers of general circulation in

the State a notice of its consideration of the proposed plan, the time and place of the hearing, the place at which interested persons may consult the plan in advance of the hearing, and place and period during which to direct written comment to the SHCC on the plan.

Section 123.306 of the State agency final regulations also require that:

"(a) . . . The SHCC, after consultation with the State Agency and health systems agencies located in whole or in part within the State, shall establish a uniform analytical approach and format for HSP's."

"(b)(2)(ii) At least 15 days prior to such publication, the SHCC shall provide a copy of the plan to the Governor for purposes of his review and comment." (Publication refers to the published notice for a public meeting on the proposed State Health Plan.)

"(c) Following adoption of the State Health Plan, as part of its coordination of AIP's, (the SHCC shall) review the AIP of each health systems agency located in whole or in part within the State and recommend revisions to the AIP to ensure consistency with revisions of the HSP required by the SHCC."

In addition, Section 121.4 of the National Guidelines for Health Planning requires that:

. . . Since HSP's must individually give appropriate consideration to the National Guidelines for Health Planning and take into account and be consistent with the Standards respecting the supply, distribution, and organization of health resources, the State Health Plan will accordingly reflect the Guidelines.

State Responsibilities

The Missouri Statewide Health Coordinating Council and the Missouri State Health Planning and Development Agency were established in January, 1977, as a State Commission, pursuant to RSMo. 1969, Sections 28.040, 28.050, and 28.060, to carry out the duties required under Public Law 93-641 and other applicable sections of the Public Health Service Act. Full statutory authority as Missouri's State Health Planning and Development Agency was fulfilled under Executive Order 79-21 signed by Governor Joseph Teasdale on June 14, 1979.

1.200 POLICIES OF THE STATEWIDE HEALTH COORDINATING COUNCIL

In recognition of its responsibilities to serve as a leader and as an agent for improvement in the health care sector, the Statewide Health Coordinating Council (SHCC) has adopted the following roles and policies to help guide the state's health initiatives:

1. Ombudsman for health -- i.e., to be available as a public, statewide forum for complaints and concerns relating to health;
2. Evaluation of state agencies -- i.e., to periodically review health agencies relative to their effectiveness in meeting the state's health policies and goals;
3. Evaluation of the state's health budget -- i.e., to annually review each health agency's budget request relative to the State Health Plan;
4. Mediation -- i.e., to coordinate the planning activities of the state;
5. Legislative advisor -- i.e., to evaluate and/or develop health legislation;
6. Advisor to Governor -- i.e., to act as a non-partisan advisor on health without specific programs to protect; and
7. Roles mandated by P.L. 93-641 -- i.e., plan development, plan coordination, and resource allocation.

Based on the responsibilities implied by the roles and the values currently held by the SHCC, the following statements of value and policy will provide the current basis of all planned intervention in the health care system in Missouri:

1. Efforts should be undertaken to develop more realistic and action-oriented prevention programs aimed at environment and life style problems which help to cause illness and/or death.
2. Health education should be promoted and emphasized at all levels through the media, utilizing all effective means of communication in addition to school health education.
3. Health is both the prevention of disability and the postponement of death.
4. Expensive, short-term methods of prolonging the act of dying should be used carefully.

5. The concept that the cost of health is much less than the cost of illness should be emphasized.
6. Quality of life should be concerned with the socio-economic, genetic, emotional, and environmental, as well as physical, well being.
7. Health care services should be available and accessible to all citizens of Missouri. Along with the availability and accessibility of health care services to all citizens of Missouri, there should be a strong emphasis on education of the public in the responsible use of health care services.
8. Citizens should pay the reasonable cost of health care contingent upon: maintaining and improving health care; charging the same rate for the health care for the same service; providing equal treatment regardless of service payment; and funding for services which would reduce the cost of institutionalization or a long period of medical care.
9. Planning should be realistic in its approach, from the establishment of goals through the development of strategies for actions. Problems inherent to certain geographic areas should be examined prior to determining goals and objectives.
10. Planning should focus on education of the younger generation's health care habits. Also, education of persons identified as being in need of services and about services currently available is deemed an important policy.
11. Motivation and incentives are necessary to get parents to accept responsibility to utilize services and/or acquire preventive techniques.
12. Planning should focus on marketing techniques for currently existing programs. Selling of techniques and services currently available through voluntary agencies and groups in existence should be encouraged. Be certain that existing services are not sufficient to meet the requirements before beginning new services.
13. Improving the quality of health is the goal of the health care system.

14. The health care system with which we are presently working must be molded and nurtured to serve the people. We must allow it sufficient time to take root, grow, and bear fruit.
15. There must be integration and coordination of the health care system with the other systems presently operative in our society, e.g., public sector; private business sector; and educational districts in order to maintain a holistic approach.
16. The goals and objectives outlined in our health care system plan(s) must be implemented.
17. Better education of the general public (consumer and provider) as to the proper use of the medical care system must be provided.
18. Financial consideration should include: incentives for consumers; encouragement to providers for promoting innovative, competitive, cost-controlling ways of rendering services; and third-party payors building flexibility into programs. Also, thought should be given to the elimination of first-dollar coverage to promote consideration before entering the system.

1.300 AGENCY HISTORY AND RESPONSIBILITIES

The enactment of P.L. 93-641 in 1975 initiated a new era in health planning. Prior to Public Law 93-641, health planning and resource development activities were conducted under three separate programs:

1. Public Law 79-725; The Hospital Survey and Construction Act (Hill-Burton);
2. Public Law 89-239; The Heart, Cancer, and Stroke Amendment (Regional Medical Program (RMP)); and
3. Public Law 89-749; The Public Health Service Amendments (The Partnership for Health Act, Comprehensive Health Planning).

Hill-Burton Program

In 1946, Congress approved the Hospital Survey and Construction Act known as the Hill-Burton Program. The Act was originally intended to finance hospital construction in rural areas and to finance the replacement of obsolete hospitals, and add beds in predominantly urban areas.

In Missouri the Program became operational in 1949 when the legislature designated the Division of Health as the target agency to implement the law. Since that time over 235 projects were reviewed and approved for funding.

Regional Medical Program

Congress passed the Heart Disease, Cancer, and Stroke Amendments to the Public Health Service Act in 1965. The Act created the two Regional Medical Programs that were established in Missouri.

The programs called for cooperative arrangements among all members of the health system including research institutions in order to make available the latest advancements in the diagnosis and treatment of heart disease, cancer, and stroke. Kidney disease was added to the program in 1970 as the approach became more regionalized in nature.

Comprehensive Health Planning

Preceding the establishment of P.L. 93-641, Missouri had an Office of Comprehensive Health Planning which was established in 1966. The establishment of this office, based on the passage of Public Law 89-749, the Comprehensive Health Planning and Public Health Services Act of 1966, was the first major attempt on both a federal and state level to plan for health services.

During the period between 1966 and 1976, the Office undertook many major projects. These projects were highly successful in identifying the numbers and types of health manpower in Missouri; and in fact, the methodological basis for these reports was copied by many other states.

The Office was also involved in establishing six designated 'B' agencies, which were the local health planning agencies under P.L. 89-749. These agencies encouraged and provided local participation in health planning. Three of the agencies also developed an areawide health plan as a part of their function.

In 1975, a major change took place in health planning when P.L. 93-641, the National Health Planning and Resources Development Act, was signed into law. The major premise in the passage of this law was that duplication, overlap, and fragmentation within the existing programs would continue unless a concerted effort was made to consolidate resources and stimulate a cooperative approach to reforming the U.S. Health System. The three previously described programs were phased out and a new program was initiated. This program (under P.L. 93-641) created a single set of structures at the State and Regional levels to deal with planning, resource allocation, and regulation.

In Missouri, a proposal to establish five health service areas was submitted to the Secretary of Health, Education, and Welfare on May 2, 1975. Pursuant to this proposal, the Secretary approved the conditional designation of these five areas. At the State level, DHEW on September 1, 1976, approved the application for conditional designation submitted by the Department of Social Services, Division of Special Services as the State Health Planning and Development Agency. Following the designation of the SHPDA in September, the Missouri Statewide Health Coordinating Council was established as a Commission and appointments were made by Governor Bond in December, 1976. This position was further solidified when Governor Teasdale issued an Executive Order reforming and reorganizing the Statewide Health Coordinating Council in June, 1979. The Statewide Health Coordinating Council's membership now consists of twenty nine members, twenty picked from HSA nominations, eight at-large, and one Veterans Administration representative. All members except the Veterans Administration representative are appointed by the Governor.

The revised State Health Plan for FY 79 will be the basis for carrying out the majority of the SHPDA's and SHCC's responsibilities. The following is a list of those responsibilities, including those mandated by law:

1. To implement those parts of the State Health and Health Systems Plans which relate to the Government of the State.
2. Review the Medical Facilities Plan to determine its consistency with the State Health Plan.
3. Review and coordinate the Health Systems Plans and Annual Implementation Plans of each HSA.

4. Execute the activities of the State's 1122 and/or Certificate of Need program.
5. To review all proposed new institutional health services.
6. To review and make findings with respect to the appropriateness of any existing institutional health service.
7. To review and approve or disapprove any state plan, and any application, as a condition for receipt of federal funds under allotments made to states under:
 - a. The Public Health Service Act
 - b. The Comprehensive Community Mental Health Centers Act
 - c. The Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment, and Rehabilitation Act of 1970
8. To guide the resource allocation in the development of health services, health manpower, and medical facilities.
9. To implement activities identified with health policies.
10. To establish priorities for changes in the health system of the state which are consistent with state and national priorities.

1.400 PURPOSE AND USE OF THE STATE HEALTH PLAN

Philosophy

Planning as a Method for Redirection and Intervention

Planning is an approach for making conscious choices about the future and directing efforts toward achieving those choices. With the ever-increasing complexity and differentiation of our society, the need for rational and systematic decision-making has become more acute in virtually every human enterprise. Planning is an integral function of such decision-making. It seeks to assure that a defensible process is used to establish desired results and to specify how these results may be achieved (see diagram on following page).

The whole idea of planning assumes the possibility of choice among alternative and feasible solutions to some kind of problem. Feasibility is the key word. The design of a plan which seeks to find and implement a solution raises this question: What kind of performance is desired and in what terms should it be expressed?

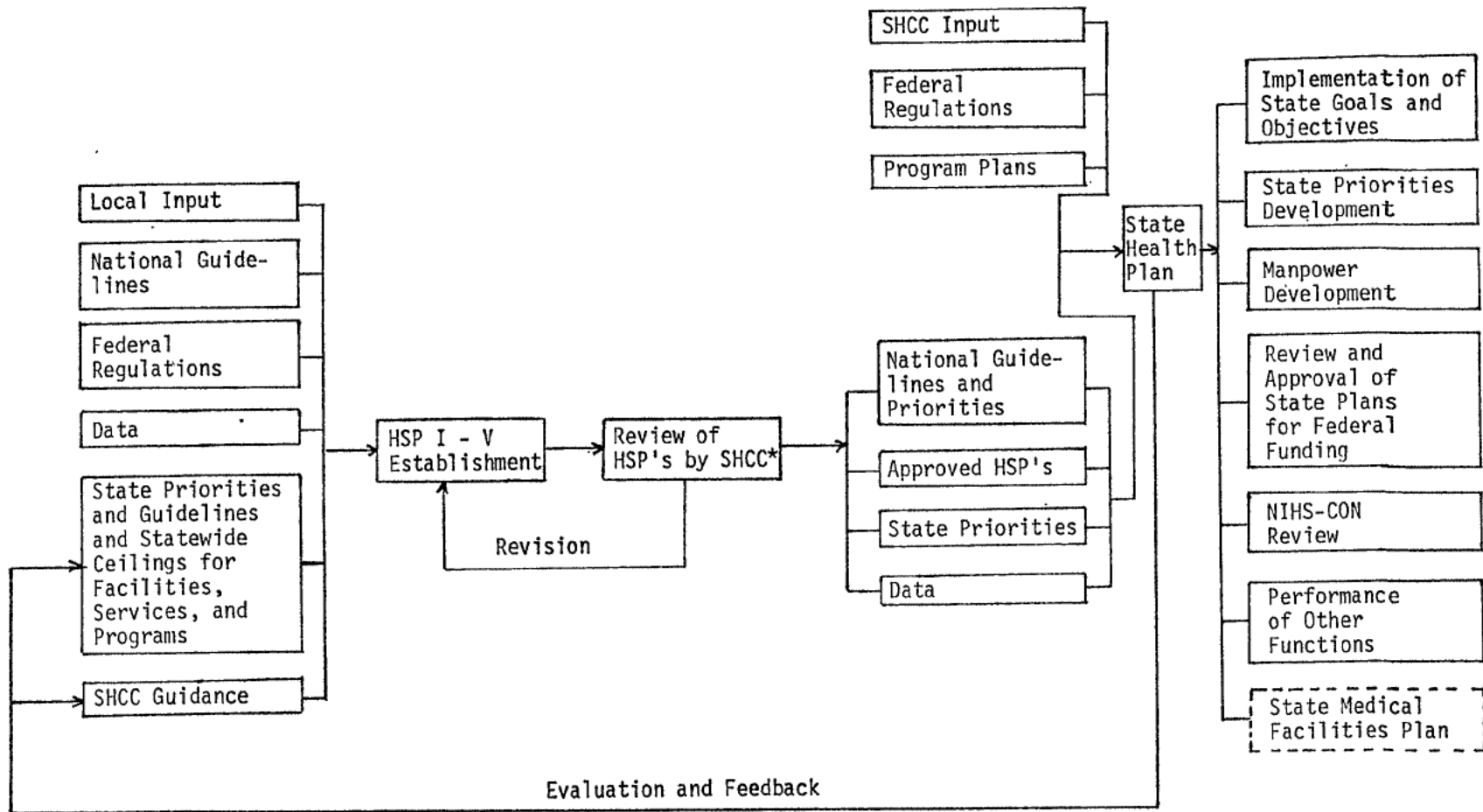
Performance is most often expressed in monetary and/or social objectives which have been established as desirable through a formalized, yet open, process. The most important purpose of planning is to coordinate the market in such a way as to reach these objectives. Plans are schedules, not straightjackets; however, if the unknown does occur, if crops fail, if oil prices skyrocket, or if alternatives cost more, it is better to have objectives that can be modified and alternatives already identified than to have no objectives at all.

It should be emphasized that a totally planned economy is not being advocated. The late Senator Hubert H. Humphrey, a strong proponent of planning, said he did not want a planned society, rather he wished to see a society in which there was planning for the future.⁴ A society should look beyond the current year in an attempt to see what the policy in food, transportation, energy, and health ought to be.

Any concept, such as planning, that appears to interfere with the 'free market system' has historically met with strong resistance in this country. The basic premise of planning is simply to assist the market in finding the best route to an equilibrium of supply and demand, and to do so with a minimum of formal assistance. The U.S. Congress has recognized planning as a necessary tool when the market fails to guide itself. Planning is seen as being essentially more efficient for the utilization of scarce resources than non-planning -- thus, planning is a mechanism to maximize the efficiency of the effectiveness of resource allocation.

CAPSULIZED SUMMARY OF HEALTH PLANNING PROCESS IN MISSOURI

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*The SHCC review of HSP's assures statewide coordination of HSP's, integration and aggregation of the HSP into the SHP and also assures review and analysis of national needs and their applicability to the health service areas. Requirements include addressing the policies of the previous SHP(s), state guidelines and priorities, SMFP requirements, and the National Guidelines for Health Planning.

Health Planning as a Solution

This plan and the current planning effort nationwide is a result of the National Health Planning and Resource Development Act of 1974 (P.L. 93-641). Congress, in passing this law, declared that the goals of the program will be:

1. to improve the health of the residents;
2. to improve the accessibility, acceptability, continuity, and quality of health care;
3. to restrain increases in cost; and
4. to prevent unnecessary duplication of services.

The product of planning and the process by which the industry's development and performance is articulated, is a written plan. Under P.L. 93-641, the various plans must address several key issues:

1. need versus demand;
2. distribution of services in relation to demand;
3. distribution of supply in relation to population;
4. resources available and/or necessary;
5. cost of these services; and
6. selection of priorities.

In general, the plans that are policy and goal-oriented (i.e., the State Health Plan and health systems plans) act as management tools, as a set of guidelines for change, and as a mechanism for identifying need. Each should seek to answer the following questions:

1. How does the area or state want health services delivered?
2. How are the services currently being delivered to the area or state?
3. What actions are needed to help the community identify and achieve its desired health status and system at some future date? and
4. How can we achieve our goals within the existing system without destroying individual rights or freedom of choice for people or jeopardize the traditional free nature of our society?

The more specific plans (i.e., the annual implementation plans and Medical Facilities Plan) act as implementing mechanisms -- that is, they act as guidelines facilitating action toward, and achievement of, the goals of the State Health Plan and the health systems plans. They should seek to answer the following questions:

1. How do we best distribute our scarce resources over the immediate future?
2. What gaps in priority areas exist which can be filled?
and
3. How can groups be motivated to offer needed services and information?

In addition, the Medical Facilities Plan (MFP) has some qualities similar to the policy plans (e.g., State Health Plan) in that need, generally established in the State Health Plan, is specifically identified in the MFP.

Purpose and Use

The purpose of this document is to provide direction and scope to future developments in the determinants of health and to serve as a basis for decisions made under project review (i.e., Sections 1523 (a)(4-6) and 1524 (c)(6) of the Public Health Service Act). Specifically, six major functions stand out:

1. serve as the vehicle for development of health policy for the state;
2. provide the basis for use in planning by governmental and non-governmental organizations at the state level;
3. provide the basis for allocation of scarce health resources at the state level;
4. state priority areas for changes in the health care system statewide;
5. set statewide goals for health and health related activities and the actions and resources required to achieve these goals; and
6. identify areas of concern for legislative or executive action.

By design, the first few editions will devote much space to the delivery of health and medical care. In each succeeding year, however, more and more emphasis should be placed on the determinants of life style, environment, and heredity.

The strategies outlined in this document offer policies, models, and direction with the sole purpose being a more efficient and effective system. The issues are, by and large, statewide in nature, which is as it should be. This is a State Health Plan. Very often, the specific findings of need and/or implementation of a policy is left to a local planning agency, to a local provider of care, or to a local voluntary health agency.

It is the Statewide Health Coordinating Council's intent to offer suggestions and to bring forth alternatives it believes feasible and reasonable. It wishes to present options, while the decisions (or at least major commitments) remain at the local level. It is hoped that the plan will be used in the program and policy development phase for projects in identified problem areas and will provide a basis from which decisions regarding resource allocation can be made.

1.500 PROCESS FOR EVALUATION OF THE PLAN

All plans must include a mechanism to evaluate the progress being made towards achievement of the document's goals. Also, the methods and strategies outlined in the plan to attain these goals must be periodically assessed if corrections in direction are to be made. Otherwise, chances for success are minimal.

In essence, the State Health Plan should not be considered a final document, but a dynamic and active one.

The present conceptual motion of planning incorporates three previously separated activities: planning, implementation, and evaluation. These activities can be considered cyclical in nature with the evaluation phase leading directly into the initiation of a new planning cycle. Thus, evaluation acts as a "feedback mechanism" whereby newly gained experience can be used to generate more rational planning and implementation process and outcomes.

In health planning, as in our dynamically changing world, this re-evaluation should take place on a periodic basis. It is evident that no decision can be considered appropriate indefinitely. The present planning horizon for the Missouri State Health Plan is five years; however, we are proposing that the Plan be evaluated yearly. Yearly evaluation should help to maintain the overall viability of the Plan within the changing health system.

Evaluation of the Plan should take place from two vantage points: outcome and process. Evaluation of outcomes requires assessing the attainment of the plan's health status and health system goals and objectives. Inherent in this evaluation will be an in-depth description of why the goals and objectives were or were not achieved. This evaluation will, very simply, determine: 1) if planning has improved the health status of Missourians; 2) if health care costs have been reduced; 3) if duplication has been eliminated; and 4) if health services have been made more available and accessible to the residents of Missouri. The criterion for determining whether these activities have been attained will be based on the quantified indicators contained in the State Health Plan. The trends of these indicators will be utilized as gross measures of the effectiveness of the planning strategies. Undoubtedly, it will be difficult to demonstrate conclusive change in many cases until effective evaluation techniques specific to each component of the Plan can be formalized. However, the gaps in conclusive evidence should not deter the evaluation of technically feasible and desirable ends.

The planning process evaluation is concerned with assessing the procedures and methods used in development of the State Health Plan. The basic purpose of this evaluation is to determine the validity of the planning outcomes. However, this evaluation can also be considered an assessment of planning philosophy, creativity, and innovation.

The overall process for evaluating the Missouri state health planning efforts should be divided into two distinct parts. The first will be the planning outcome evaluation which should be a regularly scheduled major activity of the Missouri SHCC. The actual evaluation and recommendations would go to the SHCC from a task force composed of: 1) SHCC members; 2) SHPDA staff; and 3) independent consumers and providers familiar with the Missouri planning process. The exact timing of this evaluation should be determined by the SHCC within the logical bounds of the total process. The second part of the overall evaluation will be the technical evaluation of the planning process. This should be conducted on a cooperative basis between the SHPDA staff, HEW, and the executive committee of the SHCC.

The results of the overall evaluation process should, of course, result in the improvement of the plan development and plan implementation phases of the planning process and to give the SHCC-SHPDA an objective basis for determining true accomplishment.

1.600 STATEWIDE NEEDS AND PRIORITIES

Prior to developing strategies for specific issues in health care, 'areas for priority consideration' should be identified. In previous planning activities at the state level, areas of emphasis were selected through subjective processes. While these issues were often important, no objective or defensible method was utilized in the selection process. That is, the issues were often not supported as the 'most' critical.

The identification process utilized for the first State Health Plan attempted to objectively identify areas of concern which, if not the 'most' important, were at least substantiated as being significant. (The full report with supporting data is available from the Missouri State Health Planning and Development Agency and is entitled State Health Plan Working Paper, "Step 2: Identify Problem Areas"). Input for the method came from five sources:

1. evaluation of national and state priorities;
2. evaluation of public concerns;
3. analysis of demographic and socio-economic information;
4. analysis of Missouri's health status; and
5. analysis of problem areas articulated in Missouri's health systems plans.

Findings⁵

Based on an analysis of each input, general areas of concern surfaced. Although other, more specific, priority areas were raised, four clearly stood out as being outcomes of each analysis and as being broad in scope. The four were:

- a. health care for the aged and the chronically ill;
- b. health promotion and education;
- c. mental health; and
- d. primary care.

The area of services for the aged and chronically ill is not a national priority; however, much information suggests significant problems do exist regarding restricted activity, recreation, transportation, and in general, a more productive life.

The area of health promotion and education surfaced in all five parts of the analysis. The concept of individual responsibility for one's own life style and, further, for careful use of the health care system is seen as the major point in this area. From the information in

the analysis, additional resources should be allocated to the more specific issues of heart disease, stroke, and accidental and violent death. Other areas of special consideration include improving life style choices of the young and increasing educational and life style information relative to gonorrhea, immunization, and specific types of cancer.

The area of mental health was first seen as a priority of the State's Executive Branch, but was also supported in the demographic and health status analyses. Special emphasis should be placed on promotion and prevention activities as they relate to disorders requiring institutionalization.

As with health promotion, issues relating to primary care accessibility came from all five inputs. Particular emphasis should be placed on rural accessibility, alternative modes of delivery, changes in the need for obstetrical care, and special needs of the poor and aged.

As was discussed in an earlier section, the purpose of this process was to identify 'areas of priority consideration'. The four areas described above represent the issues for which major components had been developed for the first edition of the Missouri State Health Plan.

In the second edition of the Missouri State Health Plan, the initially identified statewide priorities will be retained.⁶ These priorities had been established through a logical and delineated process. However, it was initially anticipated that these priorities would be re-evaluated for the 2nd edition of the State Health Plan, but due to problems of manpower and resources, this task was not possible to accomplish within the present planning cycle. A process of re-evaluating and establishing statewide needs and priorities will be outlined here and completed before the beginning of the next planning cycle. This process will have a broader base of input and will follow much the same analytical analysis as the first priority considerations.

Process for Priority Re-evaluation . . .

The type and design of the specific areas of input differ, therefore, it is important that the process for each input be carefully implemented. A common set of criteria binds the various processes together. Each point will be examined to determine: 1) its relevance to Missouri; 2) how critical the problem is within Missouri; and 3) whether the State Health Plan as implemented by the Statewide Health Coordinating Council, the State Health Planning and Development Agency (SHPDA), and the health systems agencies (HSA's) is an appropriate vehicle for solving such a problem.

The development of statewide health priorities will be based on the input from six sources:

1. national goals, guidelines, and priorities;

National goals, guidelines, and priorities have been articulated through several documents, all of which will be re-examined in this process. In particular, the "National Guidelines for Health Planning" (Section 1501 of P.L. 93-641) have come under serious public, HSA, and SHPDA-SHCC critique.

In addition to the "Guidelines", the "National Health Priorities" will be re-examined for their relevance to the criteria and also to the major issues of the health planning effort (i.e., equal access, quality of care, and cost containment).

2. State agency priorities and public comments concerning the State Health Plan;

State agency priorities were originally listed in the State Health Plan Working Paper⁷ and served as a compendium of state government's priorities in program development. This listing will be re-evaluated in order to establish those programs which appear to have the greatest relevance to the health of the residents of Missouri.

An evaluation of public comment on previously established plans will be completed cooperatively between SHPDA staff and the SHCC.

3. Health Systems Plans issues of concern;

For the State Health Plan to be a document of statewide use, the issues addressed by it must be important to people at the local level. Two additional criteria will be of major importance in this section: first, issues raised in the health systems plans will be included as major problem areas and second, the health systems plans will act as local verification for problems raised in the other sections.

4. Health status analysis;

The health status analysis will utilize indicators as tools for determining deviations from norms and, therefore, potential problems. The indicators will be established through the use of 'goal levels', which are defined as the desired or optimum level for that indicator. The format is: 1) establishment of desired status through an indicator; and 2) comparison of desired and current to determine a potential problem.

5. Analysis of demographic and socio-economic characteristics;

The analysis of demographic and socio-economic characteristics will utilize indicators of potential need and/or demand. 'Problem levels' will be utilized as a point for comparison with current levels. Deviation from these levels for any one indicator will not necessarily indicate a problem area; however, the indicators, when analyzed as a whole, will suggest potential areas for concern. Major deviations from the

'current level' may indicate a current or approaching change in the health of the population served. These deviations do not imply a negative implication for a particular characteristic, but simply indicate a coming change which may need to be examined.

6. Major priorities established by statewide organizations relative to health;

The importance of input from grass roots organizations and those groups of people working in health at the community level cannot be discounted. The ramifications of their inputs are very much applicable to analysis of 'like' areas across the state.

1.700 NATIONAL GOALS, GUIDELINES, AND PRIORITIES

Conflicting expectations about programs initiated by Federal or State governments arise when the influence of these programs extends to local resources. The Missouri SHCC-SHPDA are creations of both Congress and State government and as such are confronted with a great deal of the intensity of this conflict in Missouri. While attempting to interpret the concerns of all those involved, the SHCC-SHPDA are normally influenced by and accountable to: 1) consumer expectations and needs; 2) provider expectations; 3) the political process that relates to the system established by P.L. 93-641; and 4) the state government political process. The National Guidelines for Health Planning are an example of Federal criteria and standards that challenge the operational viability of the four inputs. Clearly, the type of reaction given the Guidelines varies according to the differences between the States resources and Federal standards.

The Missouri SHCC-SHPDA's responsibility lies in considering these and other guidelines and priorities on an objective and analytically defensible basis. From this foundation, the Missouri SHCC-SHPDA will attempt to serve as a balance between Federal and State interests while considering the best interests of all our citizens.

National Priorities (Section 1502)

1. The provision of primary care services for medically underserved populations, especially those which are located in rural or economically depressed areas.

The Missouri SHCC has selected the provision of primary care services as one of its top priorities. Further discussion of this priority will be found in the outpatient subsection of Diagnostic and Treatment Services.

2. The development of multi-institutional systems for coordination or consolidation of institutional health services (including obstetric, pediatric, emergency medical, intensive and coronary care, and radiation therapy services).

The Missouri SHCC cites this priority in its adopted values and policy statements. Statement number fifteen directly delineates the importance of this approach in Missouri.

3. The development of medical group practices (especially those whose services are appropriately coordinated or integrated with institutional health services), health maintenance organizations, and other organized systems for the provision of health care.

The provision of primary care services as identified by the SHCC addresses the needs for developing alternatives to and within the present health care system. Support is also found in a number of SHCC value and

policy statements. Discussion of this topic may be found in the outpatient subsection of the Diagnostic and Treatment section of the Plan.

4. The training and increased utilization of physician assistants, especially nurse clinicians.

The Missouri SHCC has deferred making a decision on fully supporting this priority. Present cultural and legal implications are being considered. A discussion of this priority may be found in the Health System Enabling Services Section and in other sections of the Plan.

5. The development of multi-institutional arrangements for the sharing of support services necessary to all health service institutions.

The Missouri SHCC has not as yet considered this National priority.

6. The promotion of activities to achieve needed improvements in the quality of health services, including needs identified by review activities of Professional Standards Review Organizations under Part B of Title XI of the Social Security Act.

Quality of care is addressed in a number of sections of the State Health Plan and in a number of special reports completed by the SHPDA staff.⁸ SHCC value and policy statements also reflect this priority.

7. The development of health service institutions of the capacity to provide various levels of care (including intensive care, acute general care, and extended care) on a geographically integrated basis.

Continuity of care is addressed in a number of subsections of the Diagnostic and Treatment section of the State Health Plan. This priority has been discussed by the SHCC in reference to cost effectiveness and appropriate utilization of available services.

8. The promotion of activities for the prevention of disease, including studies of nutritional and environmental factors affecting health and the provision of preventive health care services.

The Missouri SHCC has selected health promotion and prevention as a top priority. Health education, school health, and environmental health are all given extensive consideration in this year's State Health Plan. For further reference, these areas are discussed in the Community Health Promotion and Prevention Services section.

9. The adoption of uniform cost accounting, simplified reimbursement, and utilization reporting systems, and improved management procedures for health service institutions.

The State Health Plan discusses uniform cost reimbursement under Medicare and Medicaid. Third-party payors and policies for reimbursement of alternate modes of health care are also found in the Plan. These discussions may be found in the Health Systems Enabling Services section and the Maintenance Services section.

10. The development of effective methods of educating the general public concerning proper personal (including preventive) health care and methods for effective use of available health services.

The State Health Plan devotes a great deal of space to this priority. The basic premise of health education can be found in the greatest number of SHCC value and policy statements. It would be sufficient to say that the Missouri SHCC finds educational activities a very important part of the process of improving the health status of Missourians and improving the health care system. Discussion may be found in the Community Health Promotion and Protection Section of the State Health Plan.

Goals of the National Guidelines for Health Planning (Section 1502)

- GOAL #1: Health status should be improved in all parts of the country and among all population groups.
- GOAL #2: Health promotion should be extended through both individual and community actions.
- GOAL #3: Every person should have access to emergency and primary health care services and to appropriate specialized, long-term, and rehabilitation services.
- GOAL #4: Health care financing systems should facilitate accessibility to appropriate care for all population groups and encourage efficient methods of providing such services and managing health care institutions.

These goals are clearly consistent with present SHCC policy. The set of values and policies as originally adopted directly reflect the needs inherent in these goals.

National Guidelines for Health Planning (Section 1502)

The following discussion indicates how the Missouri SHCC-SHPDA has addressed the National Guidelines for Health Planning and where further information and references can be found. The bulk of this analysis of the guidelines will be forthcoming in the Medical Facilities Plan. The present SHCC policy is to use the guidelines in evaluating Federal and State relationships and as a benchmark in determining statewide progress, while at the same time, forming an umbrella over the aggregated local Health Systems Agency analyses of these same guidelines.

Guideline 1

There should be less than four non-Federal, short-stay hospital beds for each 1,000 persons in a health service area except under extraordinary circumstances. For purposes of this section, short-stay hospital beds include all non-Federal short-stay hospital beds (including general medical/surgical, children's, obstetric, psychiatric, and other short-stay specialized beds).

Further discussion of this guideline in relationship to Statewide analysis may be found in the General Medical Services subsection of Diagnostic and Treatment Services. The SHCC position is to allow the HSA's to address the guidelines as they see fit within the constraints of an objective, analytical, and quantitative methodology (see revised HSP Review Criteria).

Guideline 2

There should be an average annual occupancy rate for medically necessary hospital care of at least 80 percent for all non-Federal, short-stay hospital beds considered together in a health service area, except under extraordinary circumstances.

The Missouri SHCC-SHPDA has recommended an overall statewide occupancy rate of 81 percent. Recognizing the individual needs of the HSA's, the SHCC-SHPDA feels that this occupancy rate should be utilized as a benchmark only. Further discussion may be found in the General Medical Services subsection of Diagnostic and Treatment Services.

Guideline 3

1. Obstetrical services should be planned on a regional basis with linkages among all obstetrical services and with neonatal services.
2. Hospitals providing care for complicated obstetrical problems (Level II and III) should have at least 1,500 births annually.
3. There should be an average annual occupancy rate of at least 75 percent in each unit with more than 1,500 births per year.

The Missouri SHCC has not directly addressed regionalization of obstetrical units. However, SHCC policy indirectly supports standard 1 of this guideline. Analysis also indicates that 13 out of 39 Level II and III hospitals in the state conform to the 2nd standard and 69 percent of those hospitals having more than 1,500 births/year operate at 75 percent occupancy. Further discussion may be found in the Maternal and Infant Health subsection of Diagnostic and Treatment Services.

Guideline 4

1. Neonatal services should be planned on a regional basis with linkages with obstetrical services.
2. The total number of neonatal intensive and intermediate care beds should not exceed 4 per 1,000 live births per year in a defined neonatal service area. An adjustment upward may be justified when the rate of high-risk pregnancies is unusually high, based on analyses by the HSA.
3. A single neonatal special care unit (Level II or III) should contain a minimum of 15 beds. An adjustment downward may be justified for a Level II unit when travel time to an alternate unit is a serious hardship due to geographic remoteness, based on analyses by the HSA.

SHCC policy is in full support of standard 1. At the present time, a detailed analysis of guidelines 2 and 3 is being undertaken. Further discussion may be found in the Maternal and Infant Health subsection of Diagnostic and Treatment Services.

Guideline 5

There should be a minimum of 20 beds in a pediatric unit in urbanized areas. An adjustment downward may be justified when travel time to an alternate unit exceeds 30 minutes for 10 percent or more of the population, based on analyses by the HSA.

Guideline 6

Pediatric units should maintain average annual occupancy rates related to the number of pediatric beds (exclusive of neonatal special care units) in the facility. For a facility with 20-39 pediatric beds, the average annual occupancy rate should be at least 65 percent; for a facility with 40-79 pediatric beds, the rate should be at least 70 percent; for facilities with 80 or more pediatric beds, the rate should be at least 75 percent.

Statewide, the trend toward consolidation of pediatric beds (or units) into the total medical-surgical bed complement is increasing. Identification of these beds is difficult at best. Generally, occupancy rates are low and larger facilities have made few attempts at consolidating services to better serve children. Analysis developed by the HSA's becomes very important in determining future SHCC policy and statewide analysis. Further discussion may be found in the General Medical Services subsection of Diagnostic and Treatment Services.

Guideline 7

1. There should be a minimum of 200 open heart procedures performed annually, within three years after initiation, in any institution in which open heart surgery is performed for adults.
2. There should be a minimum of 100 pediatric heart operations annually, within three years after initiation, in any institution in which pediatric open heart surgery is performed, of which at least 75 should be open heart surgery.
3. There should be no additional open heart units initiated unless each existing unit in the health service area(s) is operating and is expected to continue to operate at a minimum of 350 open heart surgery cases per year in adult services or 130 pediatric open heart cases in pediatric services.

No official SHCC policy has been adopted, however, further discussion may be found in the Surgical Services subsection of Diagnostic and Treatment Services.

Guideline 8

1. There should be a minimum of 300 cardiac catheterizations, of which at least 200 should be intracardiac or coronary artery catheterizations, performed annually in any adult cardiac catheterization unit within three years after initiation.
2. There should be a minimum of 150 pediatric cardiac catheterizations performed annually in any unit performing pediatric cardiac catheterizations within three years after initiation.
3. There should be no new cardiac catheterization unit opened in any facility not performing open heart surgery.
4. There should be no additional adult cardiac catheterization unit opened unless the number of studies per year in each existing unit in the health service area(s) is greater than 500 and no additional pediatric unit opened unless the number of studies per year in each existing unit is greater than 250.

No official SHCC policy has been adopted, however, further discussion may be found in the Surgical Services subsection of Diagnostic and Treatment Services.

Guideline 9

1. A megavoltage radiation therapy unit should serve a population of at least 150,000 persons and treat at least 300 cancer cases annually, within three years after initiation.
2. There should be no additional megavoltage units opened unless each existing megavoltage unit in the health service area(s) is performing at least 6,000 treatments per year.
3. Adjustments downward may be justified when travel time to an alternative unit is a serious hardship due to geographic remoteness, based on analyses by the HSA.

No official SHCC policy has been adopted, however, further discussion may be found in the Therapeutic Radiology subsection of Diagnostic and Treatment Services.

Guideline 10

1. A Computed Tomographic Scanner (head and body) should operate at a minimum of 2,500 medically necessary patient procedures per year, for the second year of its operation and thereafter.
2. There should be no additional scanners approved unless each existing scanner in the health service area is performing at a rate greater than 2,500 medically necessary patient procedures per year.
3. There should be no additional scanners approved unless the operators of the proposed equipment will set in place data collection and utilization review systems.

Presently available data indicates that this Guideline is not being met.⁹ Analysis of CT Scanning utilization conducted by the Health Care Technology Center at the University of Missouri indicates that the guideline could be exceeded in many cases.¹⁰ The State Health Plan recommends a sliding scale based on scan time and the ratio of body to head procedures. CT Scanning is further addressed in the Therapeutic Radiology subsection of Diagnostic and Treatment Services.

Guideline 11

The Health Systems Plans established by HSA's should be consistent with standards and procedures contained in DHEW regulations governing conditions for coverage of suppliers of end-stage renal disease services, 20 CFR Part 405, Subpart U.

SHCC policy fully supports the concept of planned services for End Stage Renal Disease. Present ESRD program guidelines are consistent with the needs of Missouri's citizens. However, these guidelines should be considered as minimums when planning for ESRD services. This guideline is further addressed in the General Medical Services subsection under Diagnostic and Treatment Services.

1.800 SUMMARY OF GOALS AND OBJECTIVES OF THE PLAN

Health Status of Missouri Residents: Section 3.2

GOAL: BY 1984, MORTALITY DUE TO HEART DISEASE SHOULD BE REDUCED BY 10 PERCENT TO 345.6 DEATHS PER 100,000 POPULATION.

GOAL: BY 1984, CEREBROVASCULAR MORTALITY SHOULD BE REDUCED BY 20 PERCENT TO 84.8 DEATHS PER 100,000 POPULATION.

GOAL: BY 1984, THE INCIDENCE OF INFLUENZA AND PNEUMONIA SHOULD BE REDUCED BY 25 PERCENT TO 17.4 DEATHS PER 100,000 POPULATION.

GOAL: BY 1984, THE RATE OF CANCER MORTALITY SHOULD NOT INCREASE.

GOAL: BY 1984, THE LIFE EXPECTANCY OF MISSOURI RESIDENTS SHOULD EQUAL OR EXCEED THE 1984 U.S. AVERAGE LIFE EXPECTANCY.

GOAL: BY 1984, THE STATEWIDE MORBIDITY RATE FOR TUBERCULOSIS SHOULD NOT EXCEED EIGHT CASES PER 100,000 POPULATION.

GOAL: BY 1984, MORTALITY DUE TO ACCIDENTS SHOULD BE REDUCED BY 16 PERCENT TO 41.7 PER 100,000 POPULATION.

GOAL: BY 1984, THE COMPOSITE STATEWIDE SUICIDE RATE SHOULD NOT EXCEED THE PRESENT STATEWIDE RATE, AND NO INDIVIDUAL HEALTH SERVICE AREA SHOULD EXCEED 14.5 DEATHS PER 100,000 POPULATION.

GOAL: BY 1984, COMPOSITE STATEWIDE HOMICIDE RATES SHOULD NOT EXCEED THE PRESENT STATEWIDE RATE OF 9.9 AND NO HEALTH SERVICE AREA SHOULD EXCEED 12.0 PER 100,000 POPULATION.

GOAL: THE INCIDENCE OF NEGATIVE HEALTH RELATED CHARACTERISTICS SHOULD NOT BE ALLOWED TO INCREASE.

GOAL: BY 1984, THE ALCOHOLISM RATE IN MISSOURI SHOULD BE REDUCED TO 5 PERCENT LESS THAN THE DEPARTMENT OF MENTAL HEALTH PROJECTION FOR THAT YEAR.

GOAL: BY 1981, THE INCIDENCE OF MENTAL RETARDATION SHOULD BE REDUCED BY 10 PERCENT BELOW THE 1981 ESTIMATE OF 274,581 PERSONS.

GOAL: BY 1984, THE MISSOURI INFANT MORTALITY RATE SHOULD BE REDUCED FROM THE PRESENT RATE OF 14.2 TO 12 PER 1,000 LIVE BIRTHS WITH NO POPULATION GROUP OR HEALTH SERVICE AREA EXCEEDING 17 PER 1,000 LIVE BIRTHS.

GOAL: BY 1984, THE MISSOURI NEONATAL DEATH RATE SHOULD BE REDUCED FROM THE 1975 RATE OF 11.4 TO 10.5 PER 1,000 LIVE BIRTHS WITH NO HEALTH SERVICE AREA EXCEEDING 12 DEATHS PER 1,000 LIVE BIRTHS.

GOAL: BY 1984, THE MISSOURI FETAL MORTALITY RATE SHOULD BE REDUCED FROM THE PRESENT RATE OF 10.9 TO 9.5 DEATHS PER 1,000 LIVE BIRTHS WITH NO HEALTH SERVICE AREA EXCEEDING 12.5 DEATHS PER 1,000 LIVE BIRTHS.

GOAL: BY 1980, THE INCIDENCE OF MEASLES IN MISSOURI SHOULD NOT EXCEED 500 CASES PER YEAR.

GOAL: BY 1979, THE INCIDENCE OF RUBELLA IN MISSOURI SHOULD NOT EXCEED 50 CASES PER YEAR.

GOAL: BY 1984, THE INCIDENCE OF MUMPS IN MISSOURI SHOULD NOT EXCEED 750 CASES PER YEAR.

GOAL: BY 1984, THE NUMBER OF ABUSED AND NEGLECTED CHILDREN SHOULD BE REDUCED BY A MINIMUM OF 10 PERCENT.

GOAL: BY 1984, MORTALITY RATES DUE TO HEART DISEASE, CEREBROVASCULAR DISEASE, AND CANCER SHOULD BE REDUCED BY 5 PERCENT.

GOAL: BY 1984, THE STATEWIDE INCIDENCE RATE FOR GONORRHEA SHOULD NOT EXCEED THE PRESENT RATE OF 443.2 CASES PER 100,000 POPULATION.

GOAL: BY 1984, THE STATEWIDE INCIDENCE RATE FOR SYPHILLIS SHOULD NOT EXCEED THE PRESENT U.S. RATE OF 30.0.

GOAL: BY 1984, THE MORTALITY RATE DUE TO ACCIDENTAL DEATH FOR MALES 15-24 SHOULD BE REDUCED BY 10 PERCENT.

GOAL: BY 1984, THE MISSOURI ACCIDENT DEATH RATE FOR THE AGE GROUP ADOLESCENCE THROUGH MIDDLE LIFE SHOULD BE REDUCED BY 5 PERCENT WITH PARTICULAR EMPHASIS ON THE REDUCTION OF RATES FOR MALES.

GOAL: BY 1984, THE MISSOURI SUICIDE DEATH RATE FOR THE AGE GROUP ADOLESCENCE THROUGH MIDDLE LIFE SHOULD BE REDUCED BY 5 PERCENT WITH PARTICULAR EMPHASIS ON THE REDUCTION OF RATES FOR MALES.

GOAL: BY 1984, THE HOMICIDE DEATH RATE SHOULD BE REDUCED OVER ALL AGE GROUPS WITH PARTICULAR EMPHASIS ON REDUCTION OF THE DEATH RATE AMONG 15-24 YEARS.

GOAL: BY 1984, THE DEATH RATE DUE TO CIRRHOSIS OF THE LIVER SHOULD BE REDUCED BY A MINIMUM OF 5 PERCENT WITHIN EACH AGE GROUP IN MIDDLE LIFE.

GOAL: BY 1984, AGE SPECIFIC DEATH RATES FOR THOSE PERSONS 65 AND OVER SHOULD NOT EXCEED THE U.S. FIGURES FOR THE SAME GROUP.

GOAL: BY 1984, SUICIDE RATES AMONG MALES AGED 55-74 SHOULD BE REDUCED BY AT LEAST 5 PERCENT.

GOAL: BY 1984, MORTALITY DUE TO CIRRHOSIS OF THE LIVER AMONG THOSE AGED 65 AND OVER SHOULD NOT EXCEED THE PRESENT RATES BY AGE COHORTS (SEE TABLE 3.2-24).

Promotion and Protection Services: Section 3.3

HEALTH EDUCATION

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE ILLNESS THROUGH THE IMPLEMENTATION OF A COMPREHENSIVE SCHOOL HEALTH EDUCATION PROGRAM IN EVERY SCHOOL DISTRICT IN MISSOURI.

OBJECTIVE 1: By 1981, the Department of Elementary and Secondary Education should develop a strategy for implementing Comprehensive School Health Education.

OBJECTIVE 2: By 1983, the State Department of Elementary and Secondary Education with the assistance of the Division of Alcoholism and Drug Abuse and the Division of Health should establish as an ongoing program a resource center to support, assist, and evaluate local school programs.

OBJECTIVE 3: By 1983, each school district should have written a planned health education curriculum and implementation strategy which is in compliance with the State Department of Elementary and Secondary Education guidelines.

OBJECTIVE 4: The Missouri Division of Health, with the assistance of the Department of Mental Health (Division of Alcoholism and Drug Abuse) should establish a central reference and clearinghouse for school health literature, films, and other educational material.

OBJECTIVE 5: By 1981, the Department of Elementary and Secondary Education and the Department of Higher Education should develop in-service training programs for teachers in the area of health education.

OBJECTIVE 6: By 1983, the Missouri Division of Health, Department of Elementary and Secondary Education, and the Department of Mental Health in cooperation with schools should begin to offer school health education programs to reach other members of the community.

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE ILLNESS THROUGH THE PROVISION OF HEALTH PROMOTION SERVICES BY ALL EMPLOYERS AND UNIONS IN MISSOURI.

OBJECTIVE 1: By 1983, 10 percent of businesses and industries in Missouri should have developed health promotion programs for their employees at all levels.

GOAL: TO ENSURE THAT THE RESIDENTS OF EVERY COUNTY HAVE ACCESSIBILITY TO THE CORE PROGRAMS OUTLINED IN THE DESIRED SYSTEM AND EACH COUNTY RECEIVES THE CORE ENVIRONMENTAL AND HEALTH EDUCATION SERVICES OUTLINED IN THE DESIRED SYSTEM

OBJECTIVE 1: By 1981, counties should 1) examine their need to increase the staff of their units so that needed services might be initiated or expanded, or 2) examine their area for sources to meet the need, whichever is more appropriate.

OBJECTIVE 2: By 1982, there should be no counties without a public health unit.

OBJECTIVE 3: During 1979, the number of public health nurses in local units around the state should be increased by 10 percent.

OBJECTIVE 4: During 1979, the number of environmental sanitarians in local units around the state should be increased by 10 percent.

OBJECTIVE 5: By 1980, public health units in counties with over 25,000 population should provide all 19 services (either in-house or by referral) listed in the desired system.

OBJECTIVE 6: By 1982, there should be one health educator for every Regional Planning Commission in Missouri.

GOAL: TO INCREASE COMMUNICATION AND COORDINATION AMONG PUBLIC AND VOLUNTARY ASSOCIATIONS.

OBJECTIVE 1: By 1981, a coalition of voluntary associations should be formed.

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE ILLNESS BY PROVIDING FINANCIAL INCENTIVES FOR HEALTH PROMOTING BEHAVIOR.

OBJECTIVE 1: By 1983, third-party payors should develop incentive premium schedules for individuals who practice good health habits, and should develop reimbursement coverage for health promotion and health maintenance procedures performed on an outpatient basis

OBJECTIVE 2: By 1982, Medicare and Medicaid reimbursement should include patient and other health education, screenings, well person maintenance, and early diagnosis and outpatient treatment.

OBJECTIVE 3: By 1982, tax incentives should be developed for health promoting behavior.

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE ILLNESS BY MOTIVATING POSITIVE HEALTH BEHAVIOR THROUGH THE MEDIA.

OBJECTIVE 1: By 1981, the advertising industry and television should establish a council to provide leadership in developing accurate and ethically responsible health education programming.

OBJECTIVE 2: By 1980, the Federal Communications Commission in cooperation with DHEW should develop standards for television programming and advertising on health.

ENVIRONMENTAL HEALTH

GOAL: BY 1980, THE MISSOURI SHPDA SHOULD ESTABLISH THROUGH COOPERATION WITH APPROPRIATE STATE AGENCIES, AN INTERAGENCY COUNCIL ON ENVIRONMENTAL HEALTH CHARGED WITH COORDINATING AND MANAGING STATE AGENCY ACTIVITIES RELATED TO ENVIRONMENTAL HEALTH.

GOAL: BY 1979, THE PLAN DEVELOPMENT COMMITTEE OF THE STATEWIDE HEALTH COORDINATING COUNCIL SHOULD ESTABLISH AN ENVIRONMENTAL HEALTH TASK FORCE CHARGED WITH ADDRESSING BOTH ENVIRONMENTAL AND PREVENTIVE AREAS OF CONCERN.

GOAL: BY 1980, CANCER SHOULD BE ESTABLISHED AS A REPORTABLE DISEASE THROUGH ENABLING LEGISLATION.

GOAL: BY 1981, A MANDATORY CENTRAL CANCER REGISTRY SHOULD BE ESTABLISHED FOR THE STATE OF MISSOURI.

(This central registry would collect data restricted exclusively to malignant neoplasms and certain benign tumors and lesions considered premalignant. By completely covering the state, the central registry, through input by hospital and community based registers, would have the capability of supplying population-based information about the epidemiological aspects of cancer.)

GOAL: BY 1981, APPROPRIATE* FACILITIES FOR THE IDENTIFICATION AND STUDY OF SUSPECTED CARCINOGENS SHOULD BE ESTABLISHED IN MISSOURI.

GOAL: BY 1981, INFORMATION AND EDUCATION SERVICES (CONCERNING CANCER AND ITS ENVIRONMENTAL LINK) SHOULD BE AVAILABLE TO THE RESIDENTS OF MISSOURI THROUGH A MANDATED SCHOOL HEALTH EDUCATION PROGRAM (SEE SCHOOL HEALTH EDUCATION) THROUGH THE EXTENSION EDUCATION PROGRAMS OF THE UNIVERSITY, AND THROUGH THE ONGOING HEALTH EDUCATION PROGRAM OF THE MISSOURI DIVISION OF HEALTH.

GOAL: ALL RIVERS, STREAMS, AND LAKES IN MISSOURI SHOULD BE FREE OF CONCENTRATIONS OF POLLUTANTS WHICH WOULD BE HAZARDOUS TO HUMAN HEALTH, DAMAGING TO AQUATIC LIFE, OR DETRIMENTAL TO RECREATIONAL USE.

*Computerized gas chromatograph and mass spectrometer system.

GOAL: ALL DRINKING WATER IN MISSOURI, WHETHER PUBLIC OR PRIVATE, SHOULD BE OF HIGH QUALITY AND FREE OF BIOLOGICAL, CHEMICAL, OR RADIOLOGICAL SUBSTANCES HAZARDOUS TO HUMAN HEALTH.

GOAL: BY 1987, THE NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) FOR CARBON MONOXIDE AND PHOTOCHEMICAL OXIDANTS SHOULD BE ATTAINED AND MAINTAINED IN MISSOURI, WITH SUBSTANTIAL REDUCTIONS YEARLY AS REQUIRED BY THE CLEAN AIR ACT AMENDMENTS OF 1977.

GOAL: BY 1982, THE NATIONAL AMBIENT AIR QUALITY STANDARDS FOR PARTICULATE MATTER SHOULD BE ATTAINED AND MAINTAINED IN MISSOURI AS REQUIRED BY THE CLEAN AIR ACT AMENDMENT OF 1977.

GOAL: TO "PREVENT THE SIGNIFICANT DETERIORATION" OF SULFUR OXIDE AIR QUALITY IN MISSOURI.

GOAL: REDUCE THE AMBIENT AIR LEAD LEVELS TO THE NATIONAL STANDARD IN ALL AREAS OF MISSOURI.

GOAL: REDUCE AMBIENT AIR ASBESTOS EXPOSURE TO THE MINIMUM FEASIBLE LEVEL IN MISSOURI, WITH THE RECOGNITION THAT ASBESTOS (AS A CARCINOGEN) HAS NO ESTABLISHED "SAFE" LEVEL.

GOAL: TO ENSURE HEALTHFUL AIR FOR THE GENERAL PUBLIC IN THE INDOOR ENVIRONMENT IN MISSOURI.

OBJECTIVE 1: By 1981, work for passage of an Indoor Clean Air Act.

GOAL: MAXIMIZE RESOURCE RECOVERY FROM SOLID WASTES THROUGH SEPARATION AND RECOVERY AND TO MINIMIZE THE ADVERSE ENVIRONMENTAL EFFECTS ON HUMAN HEALTH, LAND, WATER, AND AIR RESOURCES IN MISSOURI.

GOAL: TO ENCOURAGE AND SUPPORT THE DEPARTMENT OF NATURAL RESOURCES IN UTILIZING AN INTERDISCIPLINARY APPROACH TO SOLID WASTE MANAGEMENT TAKING INTO ACCOUNT LOCAL, REGIONAL, AND STATE LAND USE PLANNING AND REFLECTING A COORDINATED APPROACH WITH LOCAL, REGIONAL, AND STATE GOVERNMENT AGENCIES, COMMERCIAL ORGANIZATIONS, AND OTHER INTEREST GROUPS.

GOAL: RESIDENTS OF MISSOURI SHOULD BE ENSURED OF AN ENVIRONMENT FREE FROM NOISE THAT JEOPARDIZES THEIR PHYSICAL AND MENTAL HEALTH.

GOAL: ALL PERSONS IN MISSOURI SHOULD BE ENSURED OF PROTECTION FROM FOODBORNE DISEASES AND HARMFUL CHEMICALS AT FOOD SERVICE ESTABLISHMENTS AND FROM FOOD SUPPLIERS AND SHOULD HAVE AN ADEQUATE CHOICE OF HIGH QUALITY AND NUTRITIOUS FOOD BASED ON SOCIAL AND CULTURAL CHOICE.

GOAL: TO ENSURE AN OCCUPATIONAL ENVIRONMENT WHICH CONTRIBUTES POSITIVELY TO THE HEALTH AND WELL BEING OF WORKERS, THEIR FAMILIES, AND THE STATE AT LARGE, THROUGH ELIMINATION OF RISKS OF ILLNESS AND INJURY IN THE OCCUPATIONAL ENVIRONMENT AND SURROUNDING AREA.

GOAL: ALL MEDICAL USES OF RADIATION SHOULD BE LIMITED TO THE MINIMUM EXPOSURE LEVELS CONSISTENT WITH REQUIREMENTS OF THE PARTICULAR PROCEDURE AS ESTABLISHED BY THE AMERICAN COLLEGE OF RADIOLOGY.

GOAL: RADIOACTIVE WASTES AND SPENT FUEL FROM NUCLEAR POWER PLANTS SHOULD BE DISPOSED OF IN SUCH A WAY THAT ALL RISKS TO PRESENT AND FUTURE GENERATIONS IS ELIMINATED.

GOAL: RISKS TO CITIZENS FROM INTER AND INTRA-STATE SHIPMENTS OF RADIOACTIVE MATERIALS SHOULD BE ELIMINATED.

OBJECTIVE 1: By 1981, comprehensive regulations governing shipments of radioactive material should be developed. (The Federal government, with input from the states, should develop these regulations. Appropriate state agencies such as the Department of Natural Resources and the Division of Health should be encouraged to express their concern on lack of federal action.)

GOAL: TO MAINTAIN THE LOWEST PRACTICAL LEVELS OF NUCLEAR RADIATION IN MISSOURI.

OBJECTIVE 1: By 1981, the Department of Natural Resources should adopt a statewide policy encouraging reduction of reliance on nuclear power, in favor of conservation and the use of safer energy sources.

GOAL: ENSURE THAT RADIOFREQUENCY FIELDS* IN BOTH THE OUTDOOR AND INDOOR ENVIRONMENT ARE KEPT AT SAFE LEVELS.

Prevention and Detection Services: Section 3.4

GOAL: TO ENABLE MISSOURI'S POPULATION TO HAVE ZERO INCIDENCE OF IMMUNIZABLE DISEASES.

OBJECTIVE 1: By 1983, immunization rates for polio, DPT, rubeola, and rubella for school age children (K-12) should be at least 95 percent.

OBJECTIVE 2: By 1983, the immunization rate for mumps for Missouri school age children (K-12) should be at least 90 percent.

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE DISEASE THROUGH THE PROVISION OF HEALTH PROMOTION PROGRAMS IN PRIMARY AND ACUTE CARE SETTINGS.

OBJECTIVE 1: By 1983, every hospital in Missouri should have developed a patient education program.

OBJECTIVE 2: By 1983, all hospitals should offer community health education programs.

OBJECTIVE 3: By 1984, primary care settings should be providing a range of health promotion programs including well person maintenance, screenings, early diagnosis, and health education.

OBJECTIVE 4: By 1984, health maintenance clinics should be accessible to everyone in the state.

OBJECTIVE 5: Adult health education programs should be expanded to include non-medical settings.

Diagnostic and Treatment Services: Section 3.5

MATERNAL AND INFANT HEALTH

GOAL: TO ENABLE MISSOURIANS TO HAVE ACCESS TO QUALITY FAMILY PLANNING SERVICES TO ENABLE FREE DETERMINATION OF THE NUMBER AND SPACING OF CHILDREN.

*Radiofrequency fields are generated by microwave ovens, CB radios, T.V.s, and other electronics.

OBJECTIVE 1: By 1981, the percentage of unmet need (as determined in 1975) for family planning services should be decreased by 10 percent from 53 to 43 percent.

OBJECTIVE 2: To reduce infant mortality to 12.0 deaths per 1,000 live births (see Health Status, Section 3.2), emphasis will be placed on reducing teenage pregnancy.

OBJECTIVE 3: By 1983, realistic family life and sex education should be offered as part of an integrated comprehensive school health education program in grades K-12.

OBJECTIVE 4: By 1980, A Guide for Developing a Comprehensive K-12 School Health Instruction Program should be used as a foundation in the development of the family life and sex education component.

OBJECTIVE 5: By 1983, legislation should be passed establishing a legal basis for a statewide family planning network disseminating information relative to voluntary sterilization and contraceptives, especially to minors. Ideally, this law and the supportive policies should include the following:

- definition of family planning needs and goals;
- establishment of specific operational objectives, such as patients to be served;
- assignment of specific responsibilities to state agencies and detailed plans for implementation developed by agencies;
- provision of sufficient funds and staff to implement the program; and
- provision for monitoring and program evaluation.

OBJECTIVE 6: The expanded roles of nursing practice as defined in the Missouri Nursing Practice Act should be clarified. This should include clarification of whether or not a nurse can work in solo practice and also what he/she can do in the absence of a physician.

GOAL: TO ENSURE THAT QUALITY PRENATAL CARE SERVICES ARE AVAILABLE AND ACCESSIBLE TO ALL WOMEN IN MISSOURI.

OBJECTIVE 1: To reduce infant mortality to 12.0 deaths per 1,000 live births (see Health Status, Section 3.2) the following actions should be implemented.

GOAL: BY 1983, MISSOURI'S HSA'S SHOULD ADDRESS THE REGIONALIZATION OF NEONATAL SERVICES LINKED WITH OBSTETRICAL SERVICES.

GOAL: BY 1983, THE TOTAL NUMBER OF NEONATAL INTENSIVE AND INTER-MEDIATE CARE BEDS SHOULD NOT EXCEED 4 PER 1,000 LIVE BIRTHS IN A DEFINED NEONATAL SERVICE AREA.

GOAL: BY 1983, ALL LEVEL II AND LEVEL III NEONATAL SPECIAL CARE UNITS SHOULD CONTAIN A DESIRED MINIMUM OF 15 BEDS.

GOAL: BY 1981, THE HEALTH SYSTEMS AGENCIES IN MISSOURI SHOULD ADDRESS IN THE HEALTH SYSTEMS PLANS THE REGIONALIZATION OF OBSTETRICAL SERVICES.

OBJECTIVE 1: By 1980, the Health Systems Agencies should identify all Level I, Level II, and Level III obstetrical facilities in their health service area.

GOAL: BY 1983, ALL LEVEL II AND LEVEL III OBSTETRICAL FACILITIES SHOULD ENSURE THAT THEY ARE OPERATING AT A 75 PERCENT AVERAGE ANNUAL OCCUPANCY RATE.

GOAL: BY 1983, ALL LEVEL II AND LEVEL III OBSTETRICAL FACILITIES SHOULD ENSURE THAT THEY ARE OPERATING AT A DESIRED MINIMUM OF 1,500 BIRTHS ANNUALLY.

SURGICAL SERVICES

GOAL: BY 1983, THERE SHOULD BE A DESIRED MINIMUM OF 200 OPEN-HEART PROCEDURES PERFORMED ANNUALLY WITHIN ANY INSTITUTION PERFORMING OPEN-HEART SURGERY.

GOAL: BY 1983, THERE SHOULD BE A DESIRED MINIMUM OF 100 PEDIATRIC HEART PROCEDURES ANNUALLY WITHIN ANY INSTITUTION IN WHICH PEDIATRIC OPEN-HEART SURGERY IS PERFORMED.

GOAL: BY 1983, ADDITIONAL OPEN-HEART UNITS SHOULD NOT BE ESTABLISHED UNLESS EACH EXISTING UNIT IS OPERATING AT 350 ADULT OPEN-HEART CASES OR 130 PEDIATRIC OPEN-HEART CASES PER YEAR.

GOAL: BY 1983, THERE SHOULD BE A DESIRED MINIMUM OF 300 CARDIAC CATHETERIZATIONS PERFORMED ANNUALLY IN ANY ADULT CATHETERIZATION UNIT.

GOAL: BY 1983, THERE SHOULD BE A DESIRED MINIMUM OF 150 PEDIATRIC CARDIAC CATHETERIZATIONS PERFORMED ANNUALLY IN ANY PEDIATRIC CATHETERIZATION UNIT.

GOAL: BY 1983, ADDITIONAL ADULT CATHETERIZATION UNITS SHOULD NOT BE OPENED UNLESS THE NUMBER OF STUDIES PER YEAR EXCEEDS 500 IN A HEALTH SERVICE AREA. ANY PROPOSED FACILITY MEETING THIS REQUIREMENT MUST ALSO PERFORM OPEN-HEART SURGERY MEETING THE OPEN-HEART SURGERY GOALS.

DIAGNOSTIC RADIOLOGY

GOAL: BY 1983, BOTH HEAD AND BODY COMPUTERIZED TOMOGRAPHIC SCANNERS (CT) SHOULD OPERATE AT A DESIRED MINIMUM BASED ON THE SCAN TIME AND BODY TO HEAD RATIO AS ESTABLISHED IN TABLE 3.5-5 BELOW.

GOAL: BY 1983, ADDITIONAL CT SCANNERS SHOULD NOT BE APPROVED UNLESS EACH EXISTING SCANNER IN A HEALTH SERVICE AREA IS PERFORMING AT A RATE GREATER THAN THE MINIMUM BASED ON THE MACHINE SCAN TIME AND BODY TO HEAD RATIO AS ESTABLISHED IN TABLE 3.5-5 BELOW AND THE OPERATORS OF THE PROPOSED EQUIPMENT WILL SET IN PLACE DATA COLLECTION AND UTILIZATION REVIEW SYSTEMS.

TABLE 3.5-5
YEARLY CT SCANNER DESIRED UTILIZATION*

BODY/HEAD RATIO	SLICE TIME IN SECONDS							
	1	5	10	20	60	75	120	135
0-100	4010	3868	3697	3391	2564	2349	1875	1756
10- 90	3645	3512	3362	3092	2353	2158	1729	1622
20- 80	3333	3216	3083	2841	2173	1997	1607	1506
30- 70	3071	2967	2847	2628	2020	1857	1499	1407
40- 60	2846	2753	2644	2445	1886	1737	1404	1319
50- 50	2658	2567	2468	2285	1769	1632	1321	1242
60- 40	2488	2406	2315	2145	1665	1537	1247	1173
70- 30	2339	2263	2179	2022	1574	1454	1181	1112
80- 20	2192	2137	2058	1911	1492	1378	1122	1056
90- 10	2088	2023	1950	1812	1417	1311	1068	1007
100- 0	1985	1921	1851	1724	1351	1249	1020	961
<p>Assumptions: 8 hours/day, 5 days/week, 52 weeks/year. 75 percent saturation of the schedule.</p> <p>*Based on data collected by the Health Services Research Center/ Health Care Technology Center, University of Missouri, Columbia, Missouri.</p>								

THERAPEUTIC RADIOLOGY

GOAL: BY 1983, ALL MEGAVOLTAGE RADIATION THERAPY UNITS SHOULD SERVE A POPULATION OF AT LEAST 150,000 PERSONS AND TREAT AT LEAST 300 CANCER CASES ANNUALLY.

GOAL: BY 1983, ADDITIONAL MEGAVOLTAGE UNITS SHOULD NOT BE OPENED UNLESS EACH EXISTING MEGAVOLTAGE UNIT IN A HEALTH SERVICE AREA IS PERFORMING AT LEAST 6,000 TREATMENTS PER YEAR.

EMERGENCY MEDICAL SERVICES

GOAL: TO PLAN, DEVELOP, AND IMPLEMENT A TOTALLY COORDINATED EMERGENCY MEDICAL SERVICES SYSTEM THAT IS AVAILABLE TO EVERYONE IN MISSOURI.

OBJECTIVE 1: By 1981, a statewide 911 or single access number should be implemented.

OBJECTIVE 2: By 1983, the Bureau of Emergency Medical Services (BEMS) should coordinate and develop a state EMS communications plan which includes ambulance-to-hospital communications, medical control, central dispatch, and interfact with Public Safety.

OBJECTIVE 3: By 1980, the Bureau of Emergency Medical Services should develop public information and education programs which utilize telephone stickers, information brochures, public presentations, filmstrips, and the media.

OBJECTIVE 4: By 1980, the current emergency services legislation should be amended to include patient care standards in order to revoke personnel licenses for repeated offences of negligence.

OBJECTIVE 5: By 1980, the state legislature should appropriate adequate funding to keep the coordinated systems approach of the seven EMS regions on-going once Federal funding is lost, through a cost-matching procedure with local areas.

OBJECTIVE 6: By 1980, legislation should be passed requiring all ambulance personnel to be minimally trained in the Department of Transportation 81-hour course or its equivalent.

OBJECTIVE 7: By 1981, the Bureau of Emergency Medical Services, with the advice and assistance of the Missouri Hospital Association, should establish a standardized Emergency Room form used by all emergency facilities throughout the state.

OUTPATIENT SERVICES

GOAL: TO INCREASE THE ACCESSIBILITY OF PRIMARY CARE SERVICES IN MISSOURI BY AUGMENTING THE EXISTING SYSTEM THROUGH THE USE OF ALTERNATIVE DELIVERY METHODS.

OBJECTIVE 1: By 1984, incentive and alternative education programs should be developed and initiated for the education and recruitment of manpower determined to be required to meet the primary care needs in Missouri.

OBJECTIVE 2: By 1981, the feasibility of altering the concept of the hospital as a setting primarily for acute care should be determined.

OBJECTIVE 3: By 1982, the feasibility of expanding the use of rural public health units in the delivery of primary care services should be determined and, where possible, a program for implementation should be developed.

OBJECTIVE 4: A study of alternative systems dealing with insurance, ownership, and various payment mechanisms should be completed and included in the overall model for primary care services.

MENTAL HEALTH SERVICES

GOAL: TO REDUCE THE PREVALENCE OF ALL FORMS OF MENTAL AND EMOTIONAL DISEASE THROUGH A PLANNED APPROACH OF PREVENTION, EDUCATION, AND TREATMENT AND THROUGH IMPROVED OPPORTUNITIES FOR ALL CITIZENS.

OBJECTIVE 1: By 1983, the Department of Mental Health should establish an integrated mental health system. This system should provide a minimum of the following: 1) services for individuals with mental or emotional illness; 2) services for the maintenance of well being encompassed within the concept of mental health; 3) research intended to discover the causes and effects of mental illness and to improve treatment and support programs and by applying findings to reduce their incidence; and 4) manpower and training programs.

OBJECTIVE 2: By 1980, the Department of Mental Health should establish the following general priorities for future integrated health systems planning: 1) promotion of community based mental health programs; 2) preventive mental health services; 3) services to special 'target' populations; and 4) deinstitutionalization with sensitivity.

OBJECTIVE 3: By 1981, the Department of Mental Health should begin assessing and coordinating all mental health services in the State of Missouri.

OBJECTIVE 4: By 1980, the Division of Comprehensive Psychiatric Services should increase their treatment capability for high risk populations and populations in areas of unmet need by assuring availability and accessibility to referral and treatment services.

OBJECTIVE 5: By 1980, the Department of Mental Health, in cooperation with other appropriate state agencies, should eliminate any inappropriate institutionalization and should ensure the availability of appropriate sites for its Community Placement Program.

OBJECTIVE 6: By 1980, the Division of Comprehensive Psychiatric Services should fully institute the Purchase of Services system in contracting for new prevention and treatment services and should establish a system to evaluate empirical data to be derived from the POS system. This data should be used in conjunction with regional psychiatric service councils to determine local needs and resources.

OBJECTIVE 7: By 1979, the Division of Comprehensive Psychiatric Services should ensure continued monitoring and evaluation of existing services under their purview.

OBJECTIVE 8: By 1980, the awareness of the role and scope of chemical substance abuse and the importance of personal decisions relating to that use in society should be increased among primary and secondary school age youth through integration of substance abuse education into the school health curriculum.

OBJECTIVE 9: By 1980, the establishment of contracts to coordinate programmatic efforts between the Division of Alcoholism and Drug Abuse and volunteer groups which focus on substance abuse should be facilitated in order to develop a strategy for decreasing substance abuse in women.

OBJECTIVE 10: By 1980, provider and consumer knowledge about fetal-alcohol syndrome should be increased through coordination efforts of the Division of Alcoholism and Drug Abuse and the Division of Mental Retardation/Developmental Disabilities.

OBJECTIVE 11: By 1980, the accessibility, quality, and number of treatment facilities and educational programs for the aged with substance abuse problems should be increased through the direct intervention of the Department of Mental Health.

OBJECTIVE 12: By 1980, the Division of Alcoholism and Drug Abuse and the state's health systems agencies should develop objectives aimed at increasing the availability and accessibility of substance abuse prevention and treatment services to underserved populations in Missouri.

OBJECTIVE 13: By 1980, the Division of Mental Retardation/Developmental Disabilities should consider, at least, the following four areas of concern in planning for MR/DD services:

1. public and private MR/DD resources at the community level should coordinate programs with appropriate segments of the health care system included in P.L. 93-641;
2. mental retardation could be prevented or seriously reduced in prevalence through preventive activities and a comprehensive health care delivery system;
3. the placing of MR/DD patients in community facilities should be monitored in order to upgrade the quality of the evaluation and treatment of placements; and
4. cooperation between regional MR/DD councils and health systems agencies and between the State MR/DD council and the SHCC is not mandated. However, cooperative efforts of these groups would aid the overall planning effort for mental health services and prevent potential overlap in many areas of service and in review and approval activities.

GENERAL MEDICAL SERVICES

GOAL: BY 1983, ALL HEALTH SYSTEMS PLANS SHOULD BE CONSISTENT WITH THE STANDARDS AND PROCEDURES CONTAINED IN THE DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE REGULATIONS GOVERNING SUPPLIERS OF END-STAGE RENAL DISEASE SERVICES.

GOAL: BY 1980, THE HEALTH SYSTEMS AGENCIES IN MISSOURI SHOULD IDENTIFY ALL PEDIATRIC FACILITIES IN THEIR HEALTH SERVICE AREAS AS DEFINED IN THE NATIONAL HEALTH PLANNING GUIDELINES."

GOAL: BY 1983, ALL PEDIATRIC UNITS IN URBAN HOSPITALS SHOULD CONSOLIDATE OR SHARE SERVICES IN ORDER TO MAINTAIN A DESIRED MINIMUM OF 20 BEDS PER UNIT.

GOAL: BY 1983, ALL HOSPITAL BASED PEDIATRIC UNITS SHOULD ENSURE THAT THEY ARE OPERATING AT A 65 PERCENT TO 75 PERCENT ANNUAL OCCUPANCY DEPENDING ON SIZE (20-39 BEDS, 65 PERCENT; 40-79 BEDS, 70 PERCENT; AND 80+ BEDS, 75 PERCENT).

GOAL: BY 1984, THE TOTAL NUMBER OF EXCESS LICENSED ACUTE CARE BEDS SHOULD BE REDUCED BY 3,800 FROM 25,434 TO 21,634. THE STATEWIDE LICENSED ACUTE CARE BED GOAL LEVEL SHOULD BE APPLIED BY BED SIZE AS FOLLOWS:

Less than 50	592
50-99	2,640
100-149	1,865
150-199	2,392
200-249	1,050
250+	13,095

GOAL: BY 1984, THE NUMBER OF LICENSED ACUTE CARE HOSPITAL BEDS PER 1,000 POPULATION SHOULD BE REDUCED FROM 5.3 TO 4.03.

GOAL: BY 1984, THE STATEWIDE AVERAGE PERCENT OCCUPANCY SHOULD BE INCREASED FROM 69.0 PERCENT TO 81.0 PERCENT. THE STATEWIDE OCCUPANCY RATE GOAL SHOULD BE APPLIED BY BED SIZE AS FOLLOWS:

Less than 50	67.2%
50-99	73.6%
100-149	76.8%
150-199	80.0%
200-249	81.6%
250+	84.0%

GOAL: BY 1984, THE STATEWIDE AVERAGE NUMBER OF PATIENT DAYS PER 1,000 POPULATION SHOULD BE REDUCED BY 146.1 FROM 1337.6 TO THE LEVEL OF 1191.5.

Habilitation and Rehabilitation Services: Section 3.6

GOAL: TO ENSURE THAT ALL PATIENTS WHO NEED REHABILITATION CARE RECEIVE THE FULL RANGE OF QUALITY RESTORATIVE CARE IN THE MOST COST-EFFECTIVE SETTING CONSISTENT WITH THEIR NEEDS.

OBJECTIVE 1: To encourage the training and recruitment of Physical Medicine and Rehabilitation Services personnel.

OBJECTIVE 2: By 1982, Medicare and Medicaid reimbursement barriers to outpatient rehabilitation services should be eliminated where it facilitates a more appropriate use of rehabilitation care dollars.

OBJECTIVE 3: By 1981, hospitals with distinct Physical Medicine/Rehabilitation units should work toward meeting the Joint Commission on Accreditation of Hospital Standards for the provision of care.

OBJECTIVE 4: By 1981, medical training centers in Missouri which prepare practitioners in restorative care should adequately define the total needs of the rehabilitation patients and should ensure the preparedness of graduates to effectively deliver care within the rehabilitation team concept.

GOAL: TO ENSURE THE DEVELOPMENT OF A SYSTEM FOR APPROPRIATE PLACEMENT IN RESIDENTIAL FACILITIES WHERE POSITIVE BENEFIT CAN BE RECEIVED.

OBJECTIVE 1: By 1984, quality housing should be made available which meets the needs of the differing degrees of disability among the population of developmentally disabled persons in Missouri.

OBJECTIVE 2: By 1984, the service gap for the provision of case-management services for the developmentally disabled should be reduced by 10 percent.

GOAL: BY 1984, EACH TREATMENT SERVICE GAP SHOULD BE REDUCED BY A MINIMUM OF 10 PERCENT.

OBJECTIVE 1: By 1984, special attention should be given to non-ambulatory patients in meeting the above goal.

GOAL: BY 1984, THE OVERALL AVAILABILITY OF THERAPY SERVICES IN THE PATIENT'S HOME AND IN THE NURSING HOME SETTING SHOULD BE INCREASED BY 25 PERCENT IN ORDER THAT MORE PATIENTS MAY BENEFIT FROM THERAPY SERVICES OUTSIDE THE HOSPITAL SETTING.

OBJECTIVE 1: By 1984, the percentage of nursing homes providing physical therapy should be at least 45 percent in all health service areas.

OBJECTIVE 2: By 1984, the percentage of nursing homes providing occupational therapy should be at least 30 percent in all health service areas.

OBJECTIVE 3: By 1984, the percentage of nursing homes providing speech therapy should be at least 30 percent in all health service areas.

OBJECTIVE 4: By 1984, the number of certified home health agencies offering home therapy care should increase their service capacity in order to reduce the number of unserved counties by 50 percent.

OBJECTIVE 5: By 1981, Medicaid should reimburse home services for physical therapy.

OBJECTIVE 6: By 1983, Medicaid should reimburse home services for occupational therapy and speech therapy.

Maintenance Services: Section 3.7

GOAL: TO PROMOTE THE APPROPRIATE USE OF IN-HOME SERVICES BY IMPROVING THE AVAILABILITY, ACCESSIBILITY, AND QUALITY OF THESE SERVICES, AND TO ASSIST CONSUMERS IN OBTAINING THE APPROPRIATE PACKAGE OF SERVICES NEEDED TO MAINTAIN THEIR INDEPENDENCE.

OBJECTIVE 1: By 1983, all counties in Missouri shall be served by a certified home health agency for home health aide visits.

OBJECTIVE 2: By 1980, a methodology for determining long term care need as it pertains to home health care will be developed and included in the State Health Plan.

OBJECTIVE 3: By 1982, social work services in rural Missouri should be available within a 45 minute driving time.

OBJECTIVE 4: By 1982, the number of home health visits under Medicaid should be consistent with the number of visits under Medicare, Part B, but not less than 100 visits per year.

OBJECTIVE 5: By 1981, voluntary and/or religious organizations, teaching institutions, home health agencies, health care institutions, and the Missouri Office of Aging should consider offering educational programs and other supporting services to families caring for infirmed aged relatives.

OBJECTIVE 6: By 1980, Certificate of Need legislation which includes home health services under its regulation and a licensure law should be enacted to regulate home health agencies.

GOAL: TO PROMOTE THE APPROPRIATE AND COST-EFFECTIVE USE OF HOSPITAL-BASED LONG TERM CARE BEDS.

OBJECTIVE 1: By 1981, necessary data should be gathered and reviewed to determine the appropriateness of the delivery of services in this setting for the highly infirmed convalescing patient, the extremely impaired chronic disease patient, and the custodial (intermediate care facility) patient.

OBJECTIVE 2: By 1981, improved and enforced facility control measures should be in place to regulate hospital-based long term care beds.

GOAL: TO UPGRADE THE QUALITY AND DISTRIBUTION OF LONG TERM CARE FACILITIES IN ORDER TO PROVIDE SERVICES TO PATIENTS IN SAFE, FAMILIAR, AND PLEASANT SURROUNDINGS.

OBJECTIVE 1: By 1983, the total bed capacity of long term care facilities should be in balance with the demonstrated need of each health service area.

OBJECTIVE 2: By 1980, all planning for the construction of long term care facilities should take location into account as an important factor.

OBJECTIVE 3: By 1980, standards for the physical plant, as well as activities, services, and programs required by Medicare and Medicaid should be considered minimum standards for all new Practical, Professional I and II nursing home facilities. In addition, it is strongly encouraged that these standards be utilized by existing homes in modernization activities.

NOTE: Case by case deliberation in modernization is indicated.

OBJECTIVE 4: By 1979, all nursing homes not in compliance with minimum licensure standards, applicable to that facility when it was originally licensed, should undertake no modification or expansion unless the project is to correct a violation of the licensure statute particularly in relation to life-safety codes.

OBJECTIVE 5: By 1981, each nursing home should have in place a strong quality review system.

OBJECTIVE 6: By 1981, it is desired that every nursing home have substantial and direct community involvement in its operations.

OBJECTIVE 7: By 1984, all nursing homes should develop long-range plans to be submitted to the State Health Planning and Development Agency (SHPDA).

OBJECTIVE 8: By 1980, no approval should be given to facility proposals submitted by applicants who are currently involved in licensure revocation proceedings until those proceedings are resolved.

OBJECTIVE 9: By 1983, continuing education and opportunities to upgrade staff skills should be provided for all personnel in nursing homes.

OBJECTIVE 10: By 1980, consideration should be given to the training and utilization of now available "para-professionals" in those geographic areas where professionals are not now available. Such a program should be reviewed by 1983 and possible alterations in staffing requirements considered by the state's licensure program.

OBJECTIVE 11: By 1980, at each level of nursing home care, proposed departmental costs to patients in newly constructed nursing homes should be comparable to charges to the patients in currently licensed facilities based on facility size, licensure, geographic location, and type of resident placed. Any variance from the current cost should be reviewed based on the above factors by the health service area where the facility is proposed.

OBJECTIVE 12: By 1980, nursing homes should be encouraged by the appropriate state agencies to develop shared staff, services, and programs with hospitals, other long term care facilities, health related agencies, and community service organizations.

OBJECTIVE 13: By 1980, the Department of Social Services should identify data needs and sources, and research methodologies, and should develop the capability for transition to prospective rate reimbursement by 1982. (Recognizing that moving from our present cost-reimbursement program to a prospective rate reimbursement plan is an evolutionary process.)

GOAL: BY 1984, THE NUMBER OF DAY CARE PROJECTS SHOULD BE INCREASED. DATA SHOULD BE COMPILED AND EVALUATED IN ORDER TO DETERMINE SERVICE COST EFFECTIVENESS.

OBJECTIVE 1: By 1983, three additional experimental day care centers for the aged should be developed in Missouri.

Health Systems Enabling Services: Section 3.9

GOAL: TO ENSURE THAT AVAILABILITY AND ACCESSIBILITY OF A COMPREHENSIVE AND FLEXIBLE COMPUTER-BASED INFORMATION SYSTEM.

OBJECTIVE 1: By 1982, a uniform data reporting system for all hospitals in Missouri should be developed.

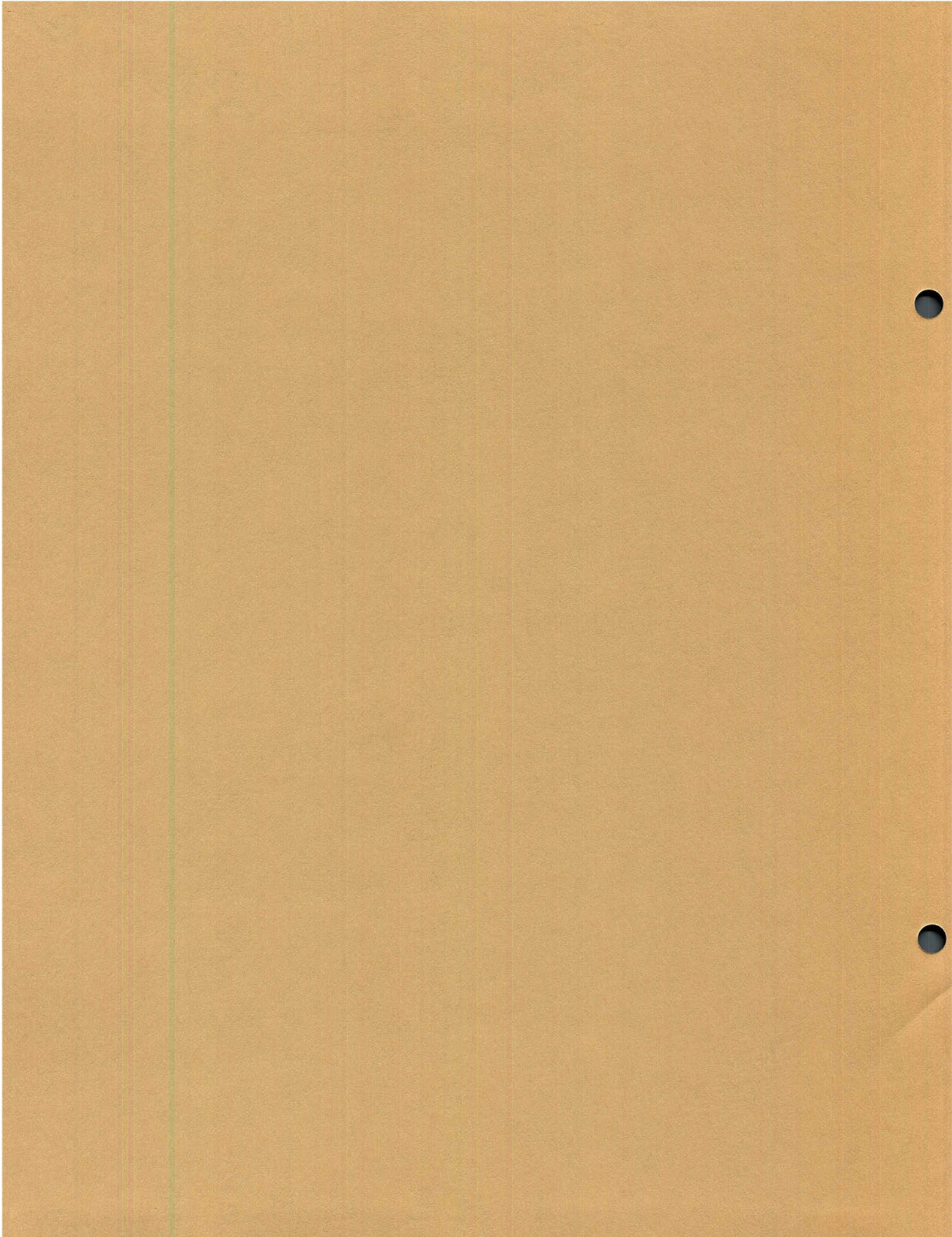
GOAL: TO ENSURE THE DEVELOPMENT, MAINTENANCE, AND DISTRIBUTION OF APPROPRIATE SKILLS AND NUMBERS OF HEALTH CARE PERSONNEL ADEQUATE TO EFFECTIVELY AND EFFICIENTLY SERVE THE POPULATION.

OBJECTIVE 1: By 1983, the distribution of manpower services should be improved so that services are more readily available and accessible in a cost-effective manner to 50 percent of the areas designated as underserved by the Department of Health, Education, and Welfare.

GOAL: TO ENSURE THAT THE LEVEL OF MEDICAL PRICE INFLATION DOES NOT EXCEED THE LEVEL OF GENERAL INFLATION.

OBJECTIVE 1: By 1983, changes within the total market structure of the health care system should be implemented which will lower the level of medical price increases to that it is no more than 1.25 times the level of general price increases.

CHAPTER 2
GENERAL DESCRIPTION OF THE STATE



INTRODUCTION

In order to relate health status and health system analyses to the population of Missouri, the characteristics of the population residing in the state must be identified and evaluated. This chapter will present a general description of the state in terms of the nature and composition of its population, its projected growth, and its geographic, social, and economic characteristics, and will attempt to point out related issues in health.

An historical analysis of 1950, 1960, and 1970 census data will be presented for the health service areas (Missouri counties only), the state, and where applicable, the nation. The decision to utilize census data for this socio-demographic profile was made for reasons of accuracy and to facilitate comparisons among the health service areas, the state, and the nation. The foremost limitation of this data is its lack of timeliness; however, by going back to the 1950 census and examining the state from an historical perspective, a greater understanding of the socio-demographic trends taking place within the state hopefully will be achieved.

2.100 GEOGRAPHIC CHARACTERISTICS

General Land Forms

Missouri contains a wide variety of land forms and physical characteristics that are difficult to summarize, however, a few of the more prominent features of statewide significance can be identified. Missouri has two prominent land forms divided by the Missouri River. These are the rolling plains to the north and the Ozark foothills and plateaus to the south. The former was created by prehistoric glacial advances that roughly follow the Missouri River between Kansas City and St. Louis; the latter by a series of uplifts and erosion processes over millions of years. Some interesting land form variations in the state are: 1) the high peaks of the St. Francois Mountains, which reach a maximum altitude of 1,772 feet at the Taum Sauk Mountains; and 2) the "Bootheel" area in the extreme southeast which has the lowest altitudes in the state - down to 230 feet. Interestingly enough, these two areas are only about 100 miles apart, thus providing evidence of the abrupt changes in land form that typify the state.

River Drainages

Missouri is blessed with many rivers. The three major drainage areas are the Mississippi, Missouri, and White River basins. The Missouri River drains most of northwest and central Missouri with the aid of a number of secondary drainage streams which include the Nodaway, Platte, Grand, Lamine, Chariton, Osage, and Gasconade Rivers. The Mississippi River drains northeast Missouri and the eastern side of Missouri with the aid of a number of secondary streams including the Fox, Wyaconda, Fabius, North, Salt, Cuivre, Meramec, Headwater Diversion, and St. Francis Rivers. The White River, which drains along the southern boundary of the state, includes the James, North Fork-White, Eleven Point, Current, and Black Rivers.

Topography and Relief

Missouri's topography and relief varies widely across the state (see relief map) and may even make drastic changes in a short distance, especially in the southern Ozark foothills area. Five major geographic regions can be identified, however, and in describing these regions, the terms "local relief" and "land slope" are used extensively. Local relief is the difference in elevation between a valley bottom and an adjacent ridge or hilltop, and land slope refers to grades of the local terrain expressed in percentages.

Northeastern Missouri is a moderately dissected, homogeneous region within the glacial plains of northern Missouri. It has a maximum local relief of 75 to 100 feet and land slopes of less than 10 percent.

SHADED RELIEF MAP OF MISSOURI (WITH PHYSIOGRAPHIC DIVISIONS AND LARGE SPRINGS)

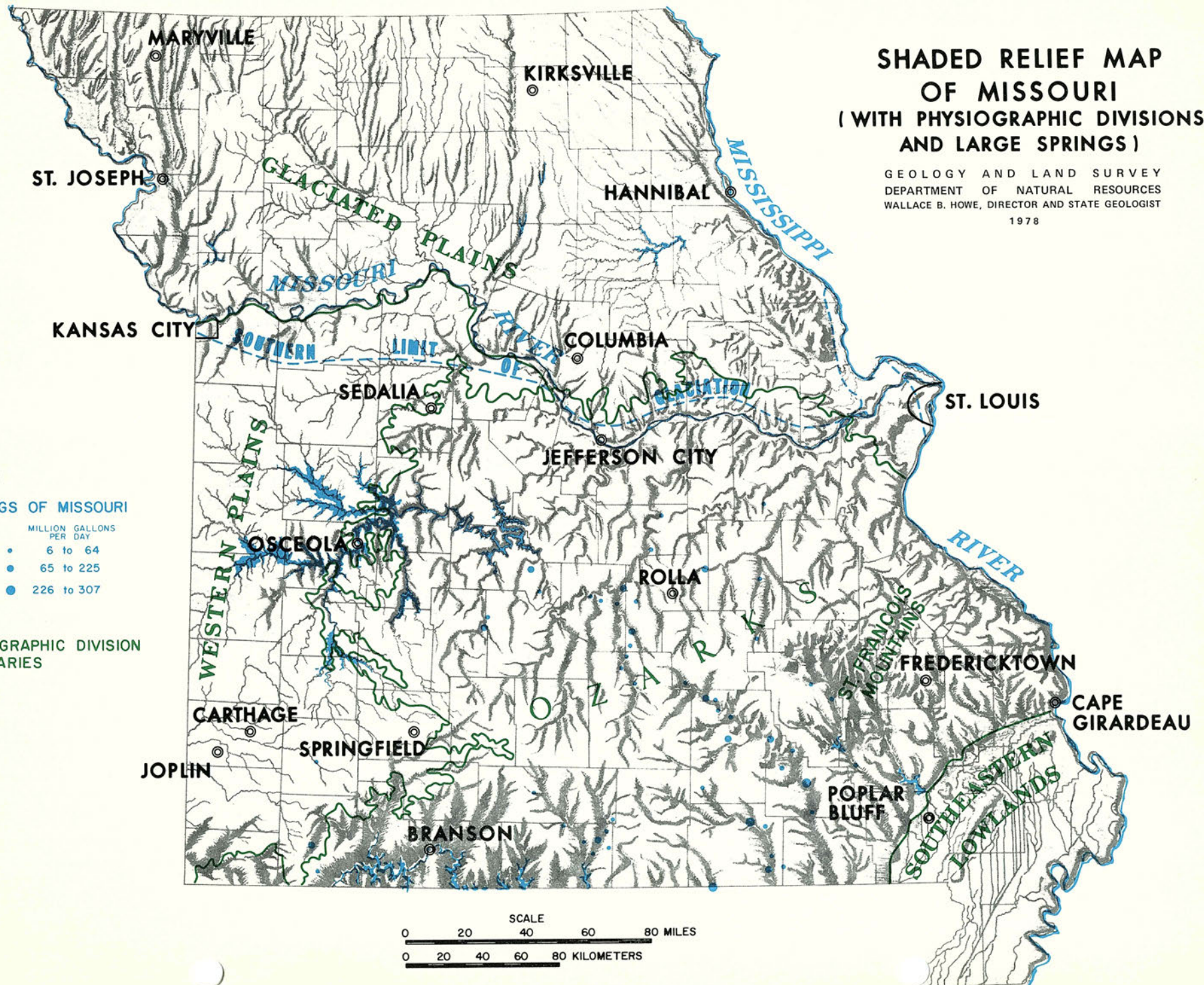
GEOLOGY AND LAND SURVEY
DEPARTMENT OF NATURAL RESOURCES
WALLACE B. HOWE, DIRECTOR AND STATE GEOLOGIST
1978

LEGEND

LARGE SPRINGS OF MISSOURI

SECOND	FEET	MILLION GALLONS PER DAY
10 to 99	•	6 to 64
100 to 349	•	65 to 225
350 to 475	•	226 to 307

— PHYSIOGRAPHIC DIVISION
BOUNDARIES



The remainder of northern Missouri is moderately dissected to smooth plains with a maximum local relief of 100 to 200 feet and land slopes of normally less than 10 percent.

The third region contains generally rolling plains and is composed of a two to three county wide swath parallel to the Kansas state line from the Missouri River to the Arkansas state line. It has a maximum local relief of 75 to 200 feet and land slopes of less than 10 up to 35 percent.

The highly dissected plateaus of the south central portion of the state is another identifiable area. It is a dispersed region of rolling plains and high peaks which is characterized, as a rule, by relief of 200 to 300 feet and land slopes of 10 to 35 percent. This south central portion of the state also contains areas possessing local relief of 500 to 700 feet and local slopes of 35 to 50 percent.

The flat low lands of the river valleys, especially in the Missouri and Mississippi Rivers, and the entire area of the Bootheel, is a region that has little or no relief and land slopes of only a few feet per mile. The only variation in the terrain of these areas is the abrupt bluff lines that often separate the river valleys from adjacent uplands. Another terrain characteristic in Missouri is the belt of high peaks (1,000 to 1,200 feet plus) which enters the southwestern section of the state in Barry County and extends in a northeast direction through Springfield and culminates in the highest peaked area in Missouri, in the vicinity of Iron County.

Special Geographic Considerations

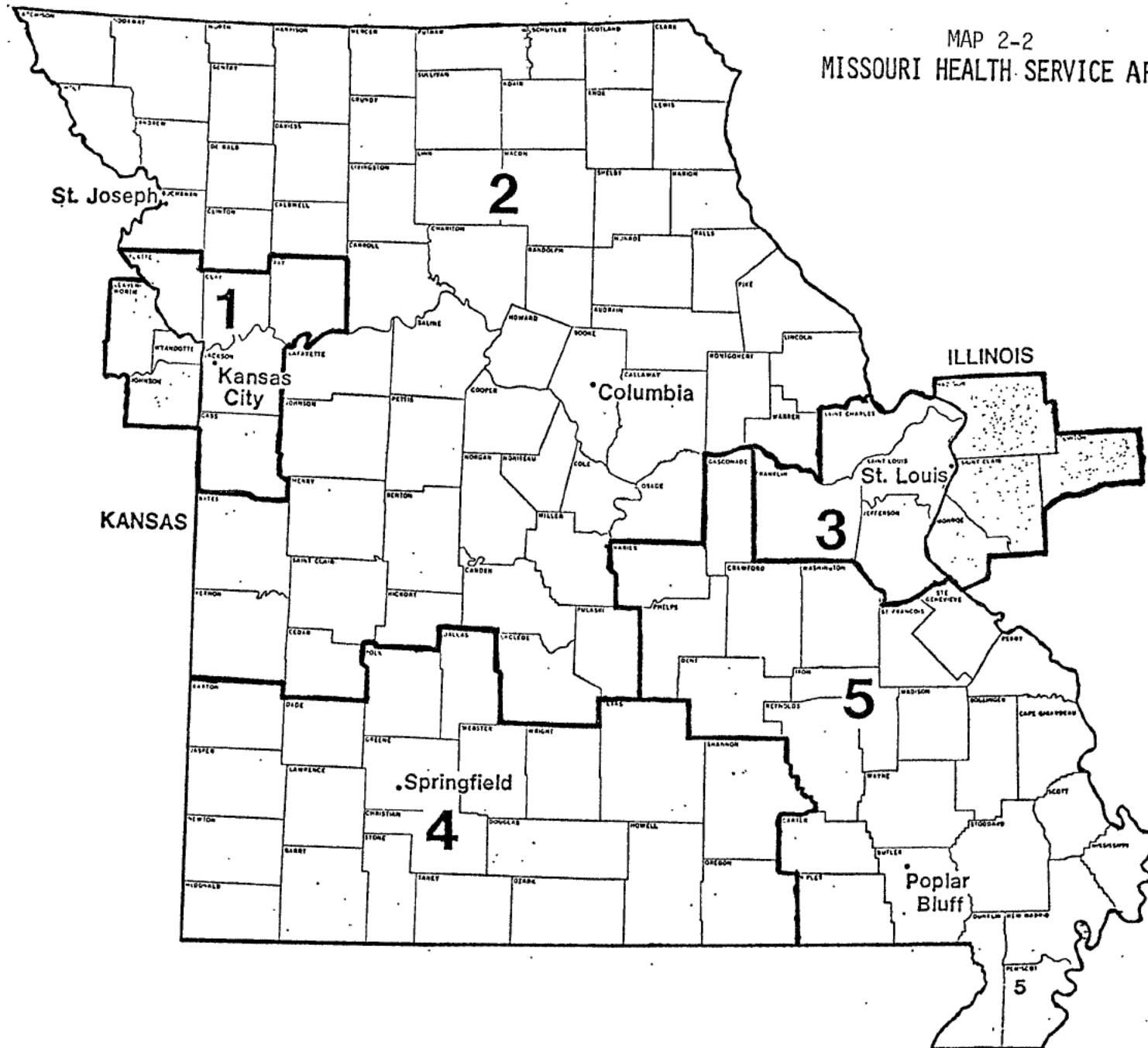
The Missouri River limits accessibility to health care services due to the limited number of bridges that span the river across the state. Considerable travel time may be required to reach medical care via these bridges. The Lake of the Ozarks poses a similar accessibility problem, and if several proposed man made lakes are constructed in the state, they will also impede access to medical services. The terrain of the Ozark foothills, along with the river system in the southern part of the state, will also greatly increase the travel time required to access health services.

Health Service Area Boundaries

Missouri is divided into five health service areas, each served by a Health Systems Agency (HSA)(see Map 2-2). Health Service Area* I is composed of five counties in the western section of the state. The boundaries of Area I coincide with those of the Kansas City Standard Metropolitan Statistical Area (SMSA), and include three counties in the State of Kansas.

*Henceforth, the five "health service areas" will be referred to as Area I, Area II, Area III, Area IV, and Area V.

MAP 2-2
MISSOURI HEALTH SERVICE AREAS



Area II encompasses sixty counties and extends completely across the northern portion of the state, from the Kansas and Nebraska borders on the west to the Illinois border on the east. In addition, Area II extends southward from the Iowa border into the central portion of the state and contains two SMSAs, St. Joseph and Columbia.

Area III, which coincides with the boundaries of the St. Louis SMSA, encompasses four Missouri counties and the City of St. Louis, plus four counties in Illinois.

Area IV encompasses twenty-one counties in southwest Missouri, and contains the Springfield SMSA. Area IV shares its borders with the neighboring states of Kansas and Oklahoma on the west and Arkansas on the south.

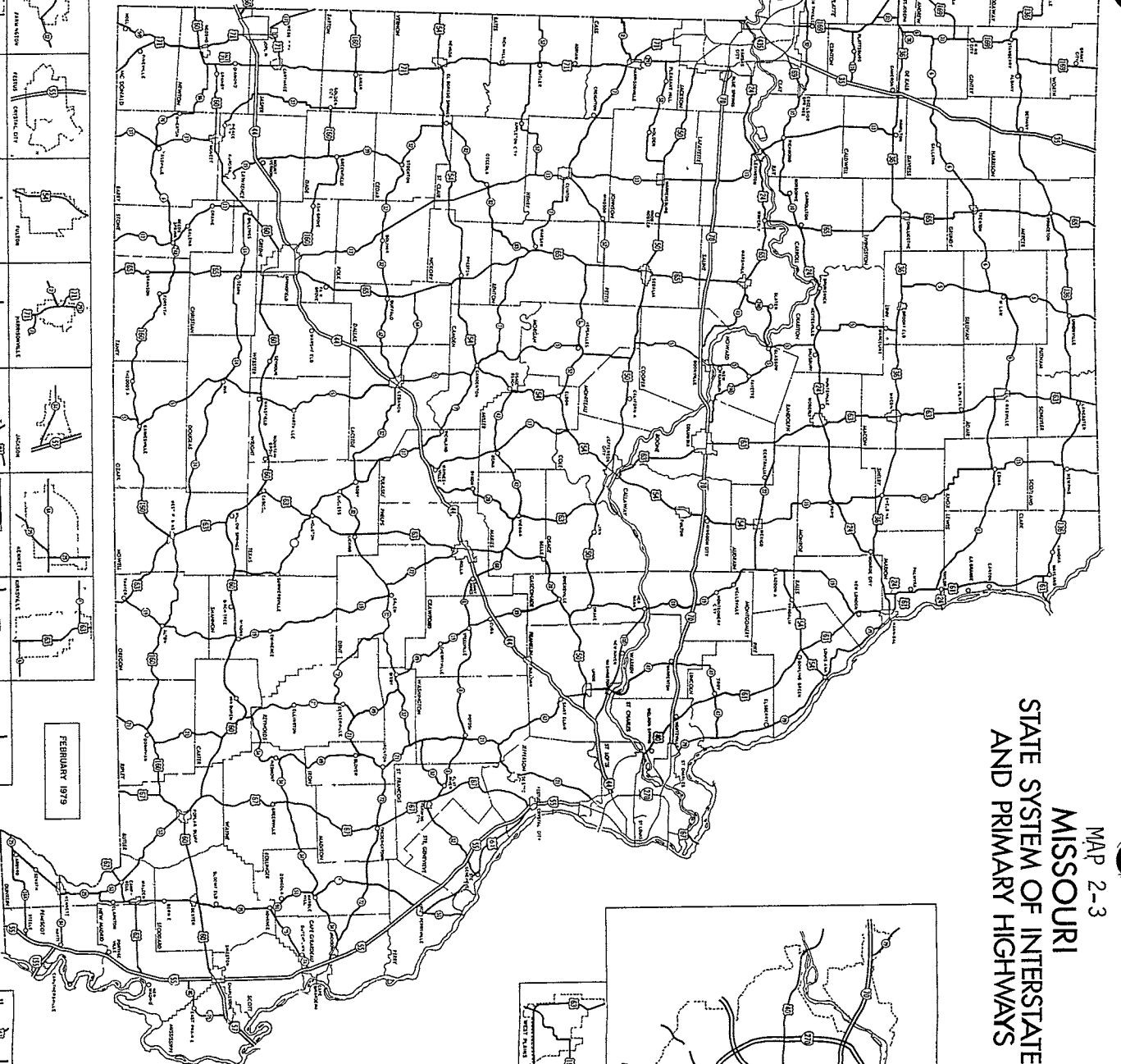
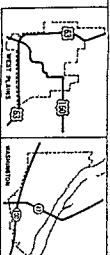
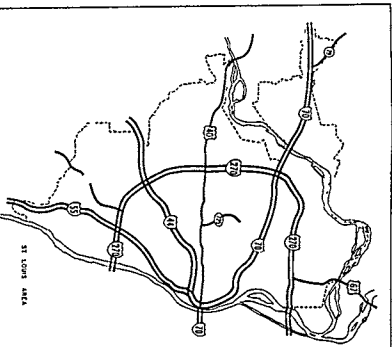
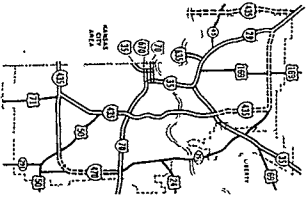
Area V is located in the southeastern section of the state and encompasses twenty-four counties. Area V is bordered on the south by Arkansas, on the east by Tennessee, Kentucky, and Illinois, and shares its northern and western boundaries with Areas II, III, and IV.

Transportation Network

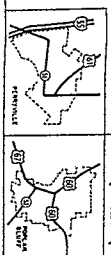
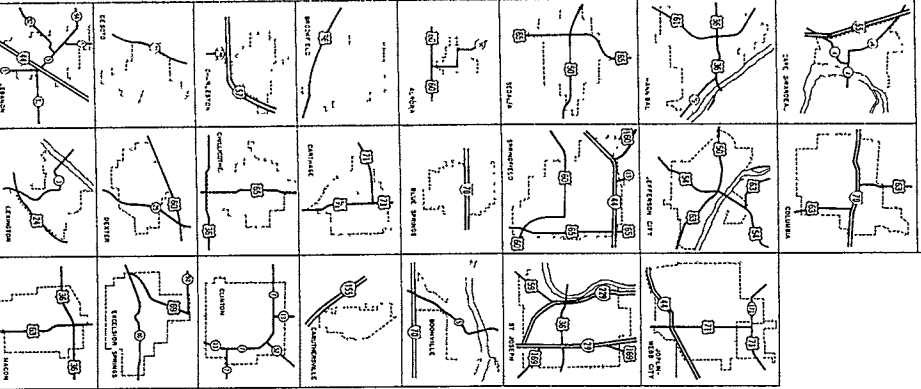
Five interstate highway systems pass through Missouri (see Map 2-3). Interstates 29 and 35, in the northeast section, run in a north-south direction and feed into Kansas City. Interstate 70 runs from east to west across the mid-section of the state and connects St. Louis and Kansas City. Interstate 44, running across the state in a northeast to southwest direction, connects St. Louis and Springfield. Interstate 55 runs from north to south in the east central and southeast portions of the state and connects St. Louis, Cape Girardeau, and Sikeston. U.S. highways also crisscross the state, and Missouri's state highways attempt to fill the intervals left by the U.S. network. As can be seen from Map 2-3, large gaps still remain in this network in the rural areas of the state.

Accessibility to health facilities located in the small towns and cities of Missouri's rural areas is hampered by the large gaps in the state's primary highway network. Improvements in secondary roads surrounding Missouri's rural towns and cities would ameliorate some of the problems associated with accessibility to health and medical facilities in Missouri.

MAP 2-3
MISSOURI
STATE SYSTEM OF INTERSTATE
AND PRIMARY HIGHWAYS



FEBRUARY 1979



2:200 DEMOGRAPHIC CHARACTERISTICS

Trends in Population

The population of Missouri is growing at a slower rate than that of the United States and is steadily declining as a percentage of the U.S. population (Figure 2-1). Missouri's population increased 9.2 percent from 1950 to 1960, from approximately 3.9 million to 4.3 million persons. By 1970, the population of the state had risen to about 4.7 million, an 8.3 percent increase over the 1960 census figure. The population of the United States, during the same two decades, increased by 18.5 percent and 13.5 percent respectively. One explanation for the state's relatively slow increase in population, especially from 1950 to 1960, lies in its high population loss through migration.

The most striking feature of the state's population growth during this period is the considerable variation in population trends within the state. Between 1950 and 1960 there was an increase in the population of Area I of 22.4 percent in contrast to a decrease of 6.5 percent in Area V. During the period from 1960 to 1970, of the five health service areas, Area III experienced the largest percentage increase in population, 12.9 percent. The population of Area V continued its trend of the previous decade with a further decrease of 3.5 percent. Map 2-4 illustrates the population trends from 1890 to 1970 for each county in the state.

From 1950 to 1970, Areas I and III experienced the largest percentage increases in population, while Areas II, IV, and V experienced lesser increases, or even decreases in population. During the next two decades, from 1970 to 1990, it is predicted that this trend will be reversed. The latest population projections indicate that by 1980 the population of Area IV will have increased by 22.1 percent from its population in 1970, while the population of Area III will have decreased by 3.1 percent. The projected population of the state in 1980 is almost 4.9 million, an increase of 4.4 percent from 1970.

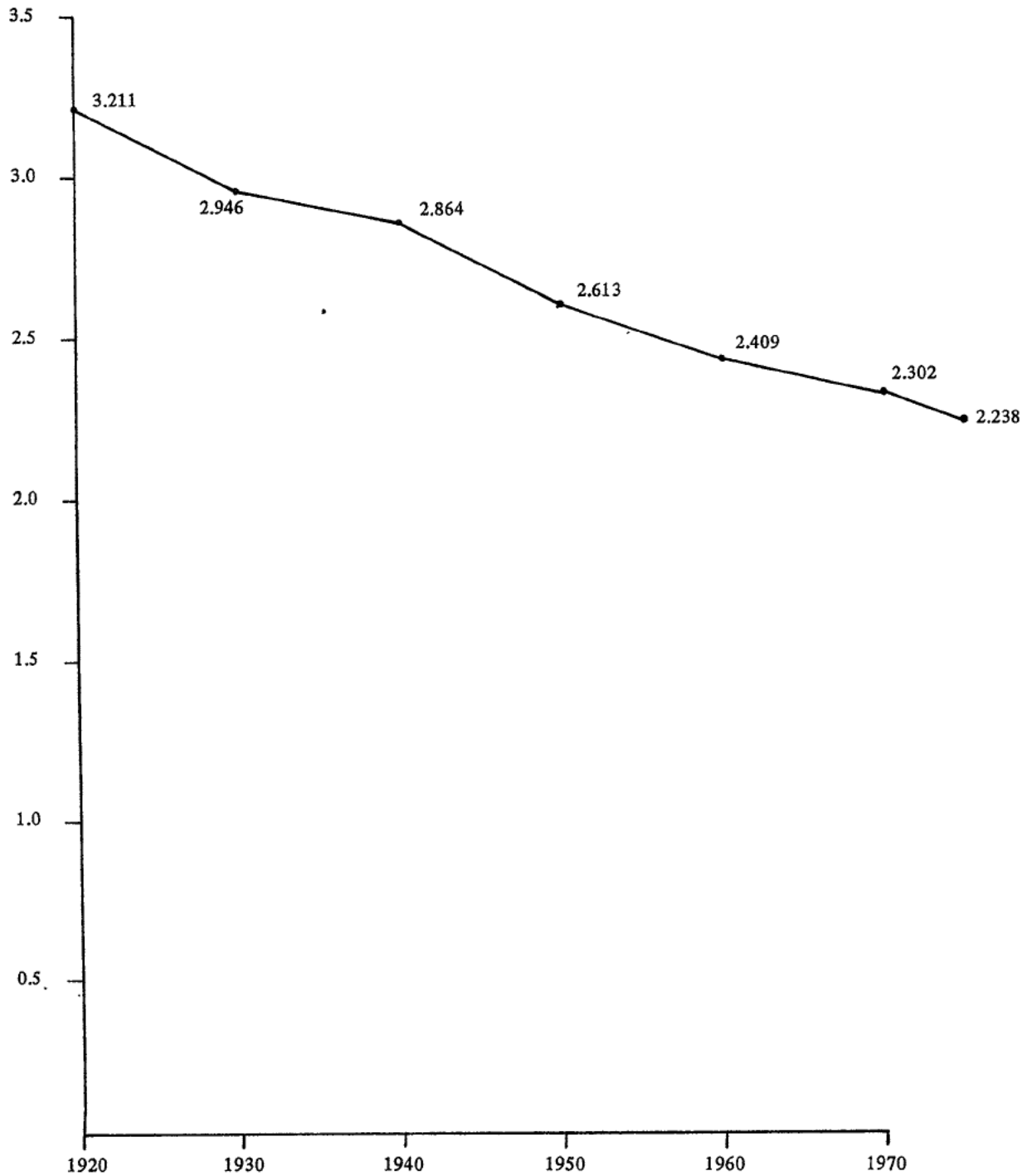
The population projections for 1990 portray the populations of all the health service areas as increasing from 1980 levels. The 1990 projections indicate that Area IV's population will undergo the largest increase, 24.4 percent, while Area III will experience the smallest percentage increase over 1980, only 3.0 percent. The projection for the state population in 1990 is almost 5.3 million, an increase of approximately 400,000, or 8.3 percent over the projected population of 1980.

Distribution of Population

In 1950, the largest concentration of the almost 3.9 million persons residing in the state was in the St. Louis area; the population in Area III represented 34.6 percent of the total state population. Area II contained 24.9 percent of the state's population, Area I, 16.1 percent, Area V, 12.6 percent, and Area IV, 11.8 percent.

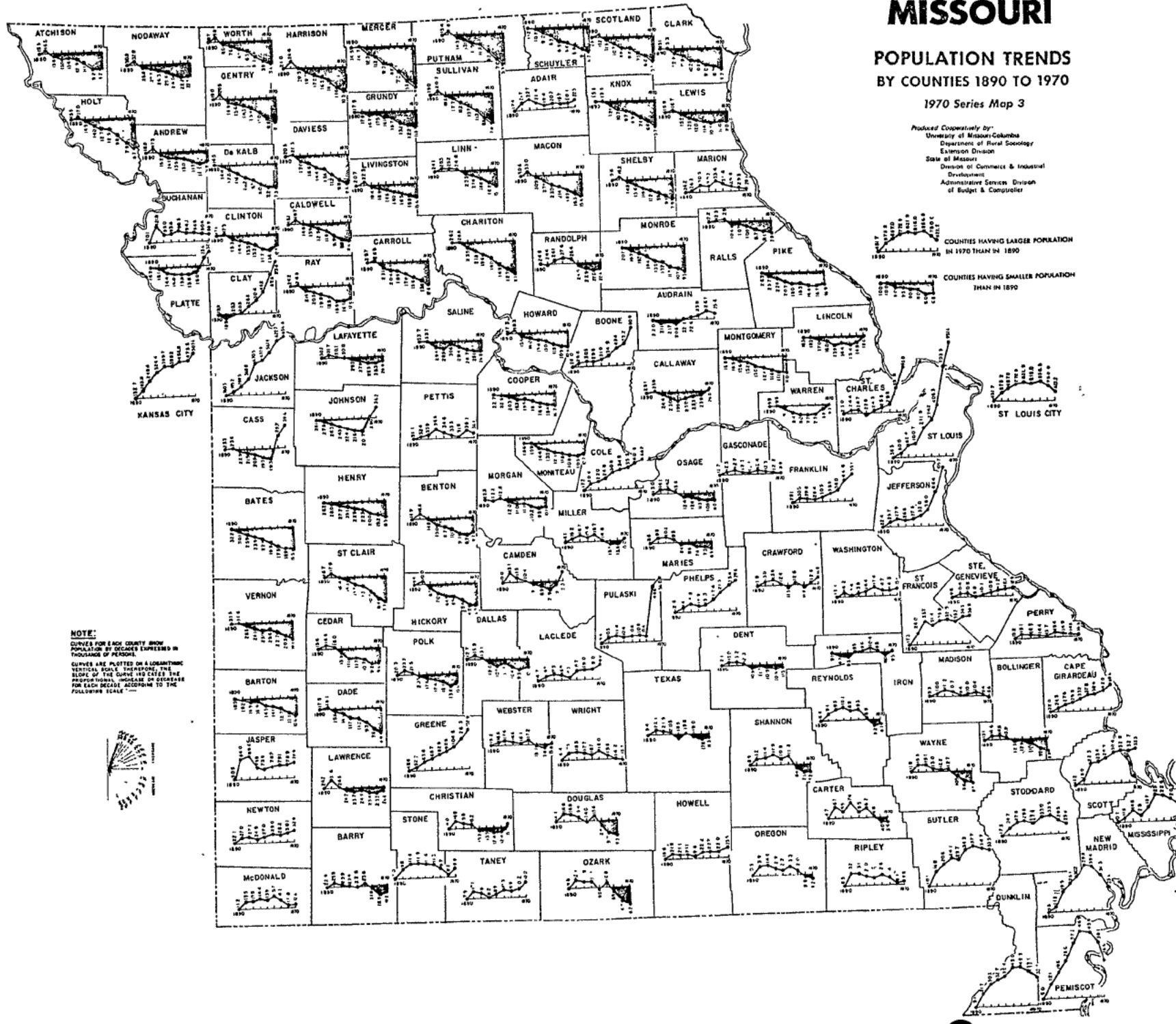
FIGURE 2-1

**MISSOURI POPULATION AS
A PERCENT OF
UNITED STATES POPULATION**



Reference: 1.

Produced Cooperatively by:
University of Missouri-Columbia
Department of Rural Sociology
Extension Division
State of Missouri
Division of Commerce & Industrial
Development
Administrative Services Division
Budget & Computer



NOTE:
CURVES FOR EACH COUNTY SHOW
POPULATION BY DECADES EXPRESSED IN
THOUSANDS OF PERSONS.
CURVES ARE PLOTTED ON A LOGARITHMIC
VERTICAL SCALE THEREFORE, THE
SLOPE OF THE CURVE INDICATES THE
PROPORTIONAL INCREASE OR DECREASE
FOR EACH DECADE ACCORDING TO THE
FOLLOWING SCALE:—



In comparison, the state's population in 1970, approximately 4.7 million persons, was distributed among the health service areas as follows: Area III, 39.1 percent, Area II, 21.9 percent, Area I, 18.5 percent, Area IV, 10.8 percent, and Area V, 9.7 percent. Over this 20 year period, this represents a considerable increase for Area I and Area III, and a decrease for Areas II, IV, and V. By 1990, with the state's population projected to be almost 5.3 million, Area III's share is projected to fall back to 34.5 percent - about the same amount it had in 1950. Area II is projected to contain 22.8 percent of the state's population, Area I is expected to have 17.5 percent, Area IV, 14.5 percent, and Area V, 10.7 percent.

Population Density

Missouri's population density has increased steadily from 1950 when the state had 57.1 persons per square mile. In 1960, the population per square mile had risen to 62.5, and by 1970 the figure was 67.8. This trend in population density in the state is consistently higher than the density of the United States. The population density of the nation in 1950 was 42.6, in 1960, 50.6, and in 1970, 57.5 persons per square mile.

The variation in population density throughout the state in 1970 ranged from 673.4 persons per square mile in HSA III to 29.6 persons per square mile in Area II. Areas I and III showed the greatest increase in population density over the 20 year period with increases of 35 and 34 percent, respectively. In contrast, Area II increased less than 1 percent, Area IV increased 9 percent, and Area V decreased 10 percent.

Urban-Rural Distribution

The segment of the population classified as "urban" includes those persons residing in unincorporated places of 2,500 or more, as well as the densely populated "metropolitan fringe" around central cities. In 1950, 61 percent of the state's population resided in urban areas. In 1970, the urban population accounted for 70 percent of the total state population. This compares to 64.0 percent of the United States population classified as urban in 1950, and 73.5 percent in 1970.

There is considerable variation in the urban and rural population distributions among the health service areas in the state. In 1970, approximately 89 percent of the populations in both Areas I and III are classified as urban. In contrast, 53.5 percent, 55.7 percent, and 61.0 percent of the populations in Areas II, IV, and V respectively, resided in rural areas in 1970.

From 1950 to 1970, substantial shifts in the residential location of the state's population has resulted from migration. Significant trends include the movement of populations to the outlying areas around the major urban centers, and the increasing proportions of the population in smaller towns and cities. By 1980, it is projected that the populations in Area II and Area IV will be predominantly urban as the trend of rural to urban migration continues.

The segment of the rural population that resides on farms has been drastically decreasing, although a higher percentage of the rural population in Missouri reside on farms than for the nation as a whole. The percentage of the rural population in Missouri that reside on farms has decreased from 56.7 percent in 1950 to 25.7 percent in 1970, while the same figure for the United States has decreased from 42.5 percent in 1950 to only 15.4 percent in 1970.

Racial Characteristics

In 1950, 92.4 percent of the state's population was white and 7.6 percent was non-white. In 1970, these figures had changed to 89.3 percent white and 10.7 percent non-white. This compares to U.S. figures of 89.5/10.5 percent white/non-white in 1950, and 87.5/12.5 percent white/non-white in 1970.

The variation of racial composition within the state ranges from 83.0/17.0 percent white/non-white in Area III in 1970 to 98.9/1.1 percent white/non-white in Area IV for the same year. The non-white percentage of the population has increased in each health service area in the state from 1950 to 1970 except in Area V, where the non-white percentage of the population decreased from 6.3 percent in 1950 to 5.7 percent in 1970.

From 1950 to 1970, the distribution of Missouri's non-white population increased in the predominantly urban Health Service Areas I and III, and decreased in the predominantly rural Health Service Areas II, IV, and V. In 1950, 58.0 percent of Missouri's non-white population of 299,000 resided in Area III, 19.6 percent in Area I, 10.6 percent in Area II, 10.5 percent in Area V, and 1.3 percent in Area IV. In 1970, 62.0 percent of the state's non-white population of 499,000 resided in Area III, 24.0 percent in Area I, 7.7 percent in Area II, 5.2 percent in Area V, and 1.1 percent resided in Area IV.

Age Characteristics

The median age of Missouri's population has been steadily decreasing from 1950 to 1970; however, it has been consistently higher than the median age of the nation. In 1950, the state's median age was 32.5 years and the median age of the United States was 30.2 years. In 1960, the difference remained about the same with a median age for the state of 31.6 and a national median of 29.2 years. By 1970, the difference between the median age of the state and the nation narrowed to 1.4 years, with the state median of 29.5 years and the national median of 28.1 years of age.

Compared with the nation, Missouri has a considerably higher proportion of persons 65 years of age and older, and a slightly lower proportion of children, young adults, and middle aged adults. The percentage of the state's aged (those 65 years of age and older) has increased from 10.3 percent in 1950 to 11.6 percent in 1960, and to 12.0 percent in 1970. For the same years, that portion of the nation's population increased from

8.1 percent to 9.2 percent and to 9.9 percent respectively. The difference between the proportion of aged persons in Missouri's population and that of the United States is decreasing, with the nation's aged population increasing by 35.0 percent from 1950 to 1960 and 21.1 percent from 1960 to 1970 while Missouri's population in that age group only increased 23.0 percent and 11.4 percent respectively during those decades.

Variations in the age composition among the health service areas within the state are considerable. For each decade since 1950, urban Health Service Areas I and III have had a smaller percentage of persons 65 years of age and older than the state, while predominantly rural Health Service Areas II and IV consistently have had a greater proportion of aged residents than the state. Furthermore, the percentage of aged persons in Area II consistently has been at least three percentage points higher than the state's proportion of persons 65 years of age and older. The percentage of aged persons in the population of Area V has been increasing steadily from 1950, when it was less than that of the state, to 1970 when Area V had a larger percentage of aged persons than the state.

Dependency

Dependency is the method of relating the populations of those persons under 18 years of age and those 65 years of age and older to the population in the age group 18-64. The youth dependency ratio is the number of persons in the under 18 age group per 100 persons in the age group 18-64. The aged dependency ratio is the number of persons ages 65+ per 100 persons in the 18-64 age group. The combined dependency ratio is the total of persons under 18 and 65+ per 100 persons ages 18-64. Besides being simply a means of comparing the age distributions of various populations to one another, dependency ratios are also a measurement of the degree of economic dependency of the non-working population to the working population, i.e., the higher the figure, the greater is the economic dependence of the non-employed segment on the employed segment of the population.

The youth dependency ratios for the state in 1950, 1960, and 1970 of 47.9, 61.9, and 60.6, respectively, are all lower than the youth ratios for the United States of 51.0 in 1950, 65.1 in 1960, and 61.4 in 1970. The aged dependency ratios in Missouri of 17.0 in 1950, 21.4 in 1960, and 21.9 in 1970 are all higher than the aged ratios for the United States, of 13.4, 16.8, and 17.7 in 1950, 1960, and 1970, respectively. This means that Missouri has a fewer number of people than the nation as a whole in the dependent age group of under 18 years of age, and a larger number of people than the United States in the dependent age group of 65 years of age and older that must be supported by the working segment of the population.

The combined dependency ratios for Missouri of 64.9 in 1950, 83.3 in 1960, and 82.5 in 1970 are all greater than the combined ratios for the United States in 1950, 1960, and 1970 of 64.4, 81.9, and 79.0, respectively. In addition, the trend from 1950 to 1970 is one of an increasing

difference between the combined dependency ratios of Missouri and the United States even though both of the ratios decreased from 1960 to 1970.

There is considerable variation in the dependency ratios among the five health service areas in the state. In 1970, the youth dependency ratio varied from a high in Area V of 64.3 to a low of 54.6 in Area II. The youth ratio of 64.3 in Area V represents a decrease from its youth ratios of 71.4 in 1950 and 75.0 in 1960. The range in the variation of aged dependency ratios, in 1970, was from a high of 27.4 in Area II, to a low of 18.2 in Area I. The range in the variation of 1970 combined dependency ratios was from a high of 90.1 in Area V to 79.1 in Area I. It should also be mentioned that the very high combined dependency ratio of 90.1 in Area V in 1970 was a considerable decrease from this area's combined ratio of 98.2 in 1960.

Health Implications of Demographic Characteristics and Trends

One advantage of Missouri's relatively slower rate of population growth compared to that of the nation is that greater opportunity is possible for the planning of health care facilities and services. Areas within the state that are losing population should plan to make more efficient use of existing facilities in order to serve larger areas. Also, during a period of slow population growth, considerably more caution should be used in any plans for the expansion of health care facilities.

The loss of population in rural areas, already of low population density, creates even more severe problems of accessibility in utilizing health services. The loss of population from the older central cities, often resulting in deteriorating housing conditions, can have serious effects on the health of the population remaining in the central city.

A rapid gain in population in the rural, outlying areas surrounding urban centers can also have serious health implications. Unplanned growth in such areas often takes place without minimum land use regulations and adequate sewage treatment and disposal systems. These problems, along with a shortage of health care facilities, can pose very serious health problems.

The non-white population with its unique health status and health system utilization characteristics is increasing at a significantly faster rate than the white population and is also becoming more urbanized. Non-whites utilize physician services less often than whites, however, hospital clinics and emergency rooms are utilized more often for physicians consultation by non-whites than by whites.

The recent increases in the aged population in Missouri are placing a much greater demand on the health services and facilities of the state. This is primarily due to the increased prevalence of chronic diseases among this age group. When hospitalized, the aged tend to require a longer hospital stay, thus increasing the demand for hospital beds; following hospitalization, the aged are also more likely to require longer rehabilitation periods, thus increasing the demand for nursing home beds. In

addition, the increasing aged dependency ratio in the state will result in an increasing economic burden on the working population, especially considering the recent trends in health care costs.

2.300 SOCIAL CHARACTERISTICS

Educational Characteristics

The educational level of Missouri's population has been rising, however, in 1970, still remained slightly below that of the nation as a whole. The median school years completed in 1970 of 11.8, for Missouri's population twenty-five years of age and above, represents a significant increase from the median in 1960 of 9.6 years, and the median in 1950 of 8.9 years. The median school years completed for the United States in 1950, 1960, and 1970 was 9.3, 10.6, and 12.1, respectively.

In 1970, 51.2 percent of Missouri's population, aged twenty-five and above, had completed less than twelve years of education. This segment of the population has been steadily decreasing in size from 1950 when 67.1 percent had not finished high school. For the nation as a whole, the segment of the adult population receiving less than twelve years of education declined from 63.9 percent in 1950 to 47.6 percent in 1970.

The portion of the population in Missouri that completed four or more years of college has increased from 5.0 percent in 1950 to 9.0 percent in 1970. The percentage of the United States population completing four or more years of college increased from 6.0 percent in 1950 to 10.7 percent in 1970.

The level of educational achievement among the health service areas in Missouri in 1970 ranged from 11.0 percent of the population (ages twenty-five years and above) in Area III that had completed four or more years of college, to 5.6 percent in Area V. In 1970, Area V also had the highest proportion of the twenty-five years of age and above population that had completed less than twelve years of education, 66.4 percent. The figure of 42.1 percent in Area I represents the lowest proportion of persons receiving less than twelve years of education of the five health service areas in 1970. The median number of school years completed for those persons ages twenty-five and above in Area I, in 1970, was 12.2, while the same figure for Area V was 9.4 years. The level of educational achievement, in 1970, of the populations in other health service areas is represented by the median number of school years completed in Area II of 11.3 years, 11.1 years in Area IV, and 11.0 years in Area III.

Household Characteristics

The total number of households in Missouri have increased at a faster rate than the state's population. The number of households in the state increased 13.5 percent from 1950 to 1960, and 11.8 percent from 1960 to 1970, when there was approximately 1.5 million households in the state. The number of persons per household for the state has decreased from 3.18 in 1950, to 3.10 in 1960, and to 2.98 in 1970. In 1970, the population per household in Area III, 3.14 persons, represents the highest of the

health service areas in the state, while Area II and Area IV share the lowest population per household of 2.83 persons. Interestingly, Area V had 3.61 persons per household in 1950 and 3.31 persons in 1960, which were significantly higher figures than the population per household for the state and the other health service areas for those years. In 1970, the populations per household in Area V decreased to 3.01 persons, probably due to the continued loss in population during these decades due to out-migration.

Health Implications of Social Characteristics

Educational achievement is directly related to health status and utilization of the health system. Low educational achievement is correlated with a lack of knowledge concerning proper nutrition, and preventive and remedial health measures. Low levels of educational achievement in a population implies an increased need for community health education services for purposes of improving prevention and detection. Educational level also directly correlates with an increased awareness of the value and importance of prevention, detection, and the prompt treatment of health problems.

2.400 ECONOMIC CHARACTERISTICS

Employment

From 1950 to 1970, the labor force in Missouri and employment in the state increased at a slower rate than the labor force and employment in the United States. In 1970, the total civilian labor force in Missouri was approximately 1.85 million persons. This figure represents a 17.2 percent increase in the civilian labor force in the state since 1950. The civilian labor force of the United States increased 37.7 percent from 1950 to 1970. Employment in Missouri increased 16.1 percent from 1950 to 1970 while the nation's employment increased 37.5 percent. Unemployment, as a percentage of the total civilian labor force, increased in Missouri from 3.3 percent in 1950 to 4.2 percent in 1970. Unemployment in the U.S. decreased from 4.8 percent in 1950 to 4.4 percent in 1970.

The degree of change in the work forces, employment, and unemployment in the health service areas in Missouri varies considerably from 1950 to 1970. In Area I, over the 20 year period, the labor force increased 34.5 percent, employment increased 34.1 percent, and unemployment increased from 3.2 percent in 1950 to 3.5 percent in 1970. The labor force in Area II increased 2.0 percent from 1950 to 1970, employment increased 0.8 percent, and unemployment increased from 2.4 percent to 3.5 percent. Area III's labor force increased 27.3 percent, employment increased 26.0 percent, and unemployment increased from 3.7 percent to 4.7 percent. The labor force in Area IV increased 12.3 percent from 1950, employment increased 10.4 percent, and unemployment increased from 2.9 percent in 1950 to 4.5 percent in 1970. Finally, Area V's labor force decreased from that of 1950 by 7.9 percent. Employment in Area V decreased also, by 8.5 percent, and unemployment increased from 4.9 percent to 5.5 percent.

The major trend that has taken place, concerning employment within Missouri from 1950 to 1970, is the more rapid rate of growth of employment in Areas I and III. This is the main factor that resulted in the large amount of in-migration to these urban centers during these years, and the out-migration from Areas II, IV, and V.

Employment by Industry

In 1970, the largest proportion of Missouri's labor force was employed in the state's service industries. The majority of employment in the service industry was in the fields of medicine and health, education, and business services. The service industry employed 25.2 percent of the working labor force. Manufacturing used 24.4 percent, and the retail industry employed 16.6 percent of the state's labor force.

The industries that utilized the highest proportion of the nation's labor force in 1970 were the same as those in Missouri. Nationally, the service industry used 26.2 percent of the labor force, manufacturing, 25.9 percent, and retail trade, 16.0 percent. A significant variation in the labor force distributions of Missouri and the U.S. occurred in agriculture, where 5.1 percent of Missouri's labor force and only 3.7 percent of the nation's work force were employed in this industry.

Labor distributions within the state are related to the urban-rural distribution. Due to the transportation facilities, numerous banking institutions, insurance companies, and federal government regional headquarters located in Kansas City, the proportions of the labor force in Area I employed by these industries in 1970 was greater than the proportion in the state. In Area I, 8.2 percent of the labor force is employed in transportation and utilities (compared to 6.1 percent for the state), 6.0 percent was employed in finance, insurance, and real estate (compared to 4.7 percent for the state), and 6.5 percent was employed in public administration (compared to 5.2 percent for the state). The most significant difference between the labor distribution in Area III and that of the state was the 28.6 percent of Area III's labor used in manufacturing, compared to 24.4 percent of the state's labor force employed in that industry. The significant differences between the labor distribution in Area II and that of the state were that 13.3 percent of the labor was utilized in agriculture (compared to 5.1 percent in the state), 17.7 percent was used in manufacturing (compared to 24.4 percent in the state), and 27.2 percent was employed in the service industry (compared to 25.2 percent in the state). The outstanding differences between Area IV and the state occurred in the retail trade industry (17.7 percent compared with 16.6 percent of the state's labor force), agriculture (7.9 percent in Area IV and 5.1 percent in the state), and finance, insurance, and real estate (3.6 percent compared to 4.7 percent in the state). The labor distribution in Area V shows agriculture utilizing 9.5 percent of Area V's labor (compared with 5.1 percent in the state), the mining industry (3.1 percent compared to 0.6 percent in the state), the construction industry (7.4 percent of labor compared to 5.9 percent), finance, insurance, and real estate (2.8 percent compared to 4.7 percent in the state), and public administration (3.7 percent compared with 5.2 percent of the state's labor force).

Trends in Employment

Between 1950 and 1970, the most significant changes in the labor distribution of both Missouri and the United States occurred in the service industry, manufacturing, and agriculture. In 1950, the service industry in the United States employed 17.9 percent of the labor force. This proportion of the U.S. labor force increased to 21.0 percent in 1960, and to 26.2 percent in 1970. The proportion of Missouri's labor force employed in the service industry increased from 16.6 percent in 1950 to 19.3 percent in 1960, and to 25.2 percent in 1970. The proportion of the U.S. labor force employed in manufacturing increased

from 26.0 percent in 1950, to 27.1 percent in 1960, and decreased to 25.9 percent in 1970. The proportion of Missouri's labor used in manufacturing followed the same trend, but even more dramatically. In 1950, 23.9 percent of Missouri's labor force was employed in manufacturing. In 1960, this proportion climbed to 29.7 percent, and in 1970, the proportion in manufacturing had decreased to 24.4 percent. The proportion of the U.S. labor force employed in agriculture decreased from 12.5 percent in 1950, to 6.7 percent in 1960, to 3.7 percent in 1970. Missouri's agricultural labor force decreased during the same period from 17.6, to 9.5, and 5.1 percent in 1970.

Income

In 1970, Missouri's per capita income of \$2,983 was less than that of the United States, \$3,687, and, since 1950, has been increasing at a slower rate than the per capita income for the United States. The median family income for Missouri in 1970 was \$8,914, compared to that for the U.S. of \$9,433. However, since 1950, the state's median family income has been increasing at a faster rate than the nation's median family income.

Per capita and median family incomes for the health service areas in the state can be divided according to urban-rural characteristics. The per capita and median family incomes in Areas I and III (both predominantly urban) are both higher than those of the state, but are increasing at a slower rate than those of the state. In 1970, the per capita and median family incomes of Area I were \$3,348 and \$10,197, respectively. Area III's per capita and median family incomes were \$3,438 and \$10,691, respectively. Areas II, IV, and V (all predominantly rural) had per capita and median family incomes that were lower than those of the state, however, they increased at a faster rate than those incomes for the state. In 1970, the per capita incomes in Areas II, IV, and V were \$2,512, \$2,516, and \$2,150, respectively. The median family incomes in 1970, for Areas II, IV, and V were \$7,217, \$6,670, and \$6,225, respectively.

Poverty

Poverty levels, developed by a federal inter-agency commission in 1969, were established on the basis of family size, number of children, farm or non-farm residence, as well as the amount of money income. In 1970, the proportion of families in Missouri that had incomes below the poverty level was greater than that of the United States. Of Missouri's total number of families, 11.5 percent were classified, in 1970, as having incomes less than the poverty level. In comparison, 10.7 percent of the nation's total number of families were in this classification. For the same year, 7.3 percent of the families in the state had incomes less than 75 percent of the poverty level, compared to 7.0 percent in the United States. A greater divergency occurred between Missouri and the nation in relation to the proportions of families with incomes less than 125 percent of the poverty level. In Missouri, 16.6 percent of the total number of families were below 125 percent of the poverty level, compared to only 15.0 percent of the nation's families.

The variation in poverty within the state follows the same pattern as per capita and median income levels. Higher proportions of families with incomes less than the poverty level were located in the predominantly rural Areas of II, IV, and V. The proportions of families with income below the poverty level in Areas II, IV, and V were all higher than the proportion of the total numbers of families in the state. The proportion of families below the poverty level in Areas I and III were lower than that of the state. The proportion of families below the poverty level in Area V is significantly higher than that of the state and the other four health service areas. In Area V, in 1970, 22.2 percent of the families had incomes less than the poverty level (while the state had 11.5 percent), 13.8 percent had incomes less than 75 percent of the poverty level (compared to 7.3 percent in the state), and 31.0 percent had incomes less than 125 percent of the poverty level (compared to 16.6 percent in the state).

Another indicator of poverty in Missouri is the distribution of the state's welfare dollars. In 1970, of the five health service areas, Area III contained the largest proportion of the state's total welfare recipients and also received the largest proportion of the state's total amount of welfare dollars. However, the total population in Area III also represented the largest proportion of the state's total population, 39.1 percent. Along with this, 36.7 percent of the total number of persons receiving welfare in the state lived in Area III, and these recipients accounted for 32.5 percent of the state's total welfare dollars. In contrast to the relatively proportionate distribution of the state's population and welfare recipients in Area III, 18.4 percent of the state's welfare recipients, and 19.1 percent of the total welfare dollars were apportioned to Area V where only 9.7 percent of the population of Missouri lived. This significantly disproportionate distribution of the state's population and welfare dollars in Area V emphasizes the severity of poverty that was shown to exist in the earlier discussion concerning the proportion of families with incomes less than the poverty level.

Poverty Trends

Between 1950 and 1970, Missouri's population increased 18.2 percent, its number of welfare recipients increased 36.6 percent, and as a proportion of the state's population, the number of welfare recipients increased from 5.5 percent to 6.3 percent. The trend in the distribution of the state's welfare recipients from 1950 to 1970 was one of an increasing proportion of recipients in the urban Areas I and III and a decreasing proportion of the state's welfare recipients in the predominantly rural Areas II and IV. The severity of poverty in Area V is clearly demonstrated when compared to both the state and the other health service areas.

To some extent, increases in welfare recipients in urban areas reflect population increases. Between 1950 and 1970, Area I's population increased 36.2 percent, its number of welfare recipients increased 65.5 percent, and, as a percentage of Area I's total population, the number of welfare

recipients increased from 4.0 percent in 1950 to 4.9 percent in 1970. The population increase in Area III and the increase in the welfare recipients was 33.6 percent and 126.0 percent, respectively. The proportion of the population in Area III receiving welfare increased from 3.5 percent in 1950 to 5.9 percent in 1970.

In contrast to Areas I and III, the number of welfare recipients in both Area II and Area IV decreased, by 16.8 percent and 3.6 percent, respectively. The population of Area II increased 4.1 percent from 1950 to 1970, and Area IV's population increased 8.5 percent. The proportion of the population in Area II receiving welfare decreased, from 6.5 percent in 1950 to 5.2 percent in 1970. This proportion of Area IV's population also decreased from 8.2 percent to 7.3 percent. Area V was an exception to the decreasing welfare rates in other rural areas. Welfare recipients in Area V increased 35 percent from 1950 to 1970, while its population decreased by 9.7 percent. In addition, the proportion of the total population that received welfare increased from 8.0 percent in 1950 to 12.1 percent in 1970.

Substandard Housing

Substandard housing in Missouri will be described in terms of the percentage of year-round housing units that lack some or all plumbing facilities. In 1970, 9.0 percent of the total year-round housing units in Missouri were in this category compared to only 6.9 percent of the housing units in the United States. Substandard housing in Area V, 20.3 percent, represented the highest proportion among the health service areas. Area II had 14.4 percent of its housing classified as substandard, Area IV, 13.0 percent, Area III, 4.2 percent, and Area I had 3.6 percent. It is clearly apparent that the predominantly non-urban health service areas contain the highest proportions of substandard housing.

Overcrowding

The proportions of overcrowding, expressed as the percentage of the total number of occupied housing units with greater than or equal to 1.01 persons per room, are about the same for Missouri and the United States and have been decreasing at the same rate since 1950. Overcrowding in the state has decreased from 16.5 percent of the total occupied housing units in 1950, to 8.0 percent in 1970, while the proportion in the United States has decreased from 15.5 percent to 8.2 percent. Overcrowding in Areas III and V has been consistently greater than for the state during these years, Areas I and II have had consistently lower proportions of overcrowding, while overcrowding in Area IV has been approximately the same as the proportion in the state. Area V has consistently had the greatest proportion of occupied housing units with conditions of overcrowding. In 1950, 25.0 percent of the occupied housing units in Area V were overcrowded, compared to 16.5 percent in 1960, and 9.9 percent in 1970. Of the five health service areas, the smallest proportion of overcrowding has existed in Area I, which had 9.3 percent in 1960 and 6.0 percent in 1970.

Health Implications of Economic Characteristics and Trends

The major change that has occurred in Missouri's employment structure consists of an increased dependence on the commercial and service industries. The effect of this shift in employment has been considerable changes in the residential location and mobility, and the physical and social environments of a large portion of the population in the state. Increases in mental health disorders and hypertension are directly related to these changes.

The increased concentrations of low-income populations in the urban centers of the state, which is also related to the changes in the employment structure, has resulted in the conversion of old, single-family housing into multi-family, to meet the increased demand for low income housing. Continued increases in the populations below or near the poverty level causes overcrowding in households, substandard housing, and associated unsanitary living conditions to increase. As these conditions increase, the diseases associated with poverty, such as disabling chronic conditions, TB, and heart disease, also increase.

2.500 VITAL STATISTICS

Live Birth and Death Rates

Figure 2-2 shows the trends in birth and death rates in Missouri from 1910 to 1970. During this period the death rate has declined from 13 per 1,000 population to the 1970 rate of 11.0 per 1,000 population. During the same period, the birth rate has gone through a cycle; and although it hasn't reached the level that it is projected to have been before 1900, it is above the 1910 level. Although the birth rate increased slightly from 1969 to 1970, it has decreased from 1971 to 1975, and continued the downward trend that began in 1960. In fact, the birth rates in Missouri in 1973, 1974, and 1975, of 14.4, 14.5, and 14.4, respectively, were all lower than the previous lowest point in the cycle of 14.7 in 1936. This trend occurred in spite of the fact that the number of women of childbearing ages was higher due to the higher birth rates in the 1940's and 1950's. The result of this trend has been a significant decrease in the population growth rate, which points to the need for a cautious approach to health care facility expansion, especially obstetric and pediatric services.

Infant Death Rates

Figure 2-3 depicts the trend in infant death rates by race in Missouri from 1932 to 1970. The race differentiation in the infant death rate shows the non-white rate remaining higher than the white rate, although both rates seem to be decreasing at the same proportion. This decrease in the infant death rate has a great impact on the aging of the population. The first year of life is the most vulnerable portion of the life cycle, and a decrease in infant mortality adds a larger population to the total average length of life. For further analysis of infant mortality, refer to Section 3.2 (Health Status), and Section 3.5 (Maternal and Infant Health).

Mortality Rates for the Five Leading Causes of Death

Heart disease is the Number 1 killer of Missourians and has had the highest age-adjusted death rate* of all causes since 1911 when the state started keeping vital records. Cancer, stroke (cerebrovascular disease) and accidents have followed in that order during the last 20 years. The fifth leading cause of death is now influenza/pneumonia (acute respiratory disease).

Infectious disease mortality declined dramatically between 1911 and 1972 as the age-adjusted death rate from this cause dropped from 300 to only 7.5 deaths per 100,000 population. Figure 2-4 shows this decline

*An age-adjusted death rate is one that has been adjusted to a standard population in order to take into account differences in age composition. The death rates stated in this section and shown by Figure 2-4 have been adjusted to the 1970 census population of Missouri.

LIVE BIRTH AND DEATH RATES 1911-1970

(per 1,000 population)

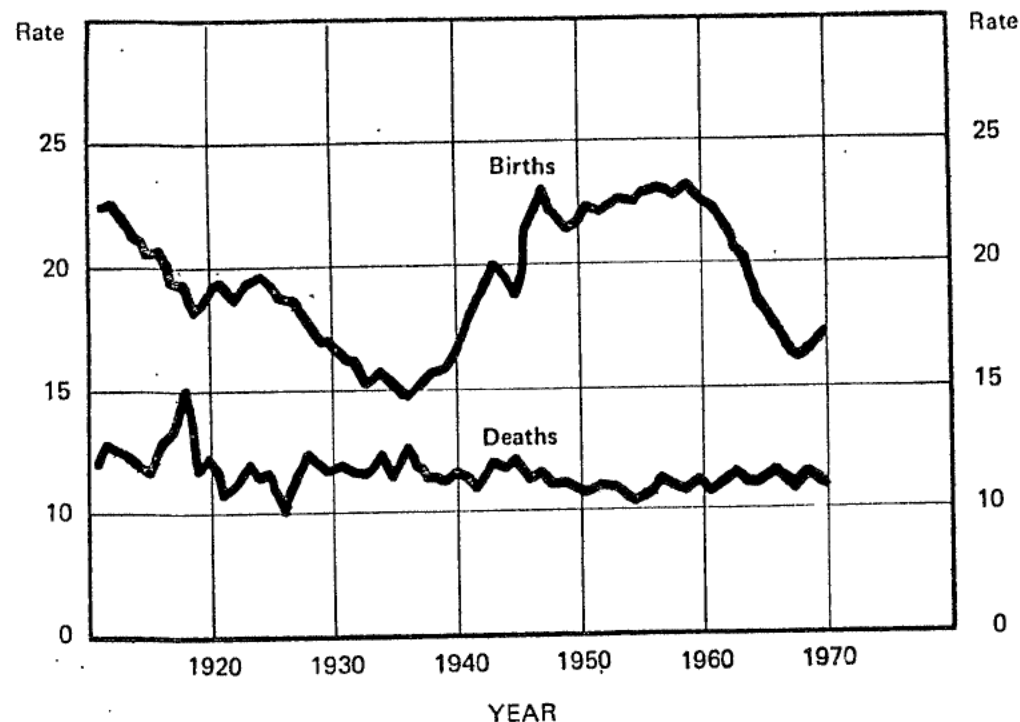
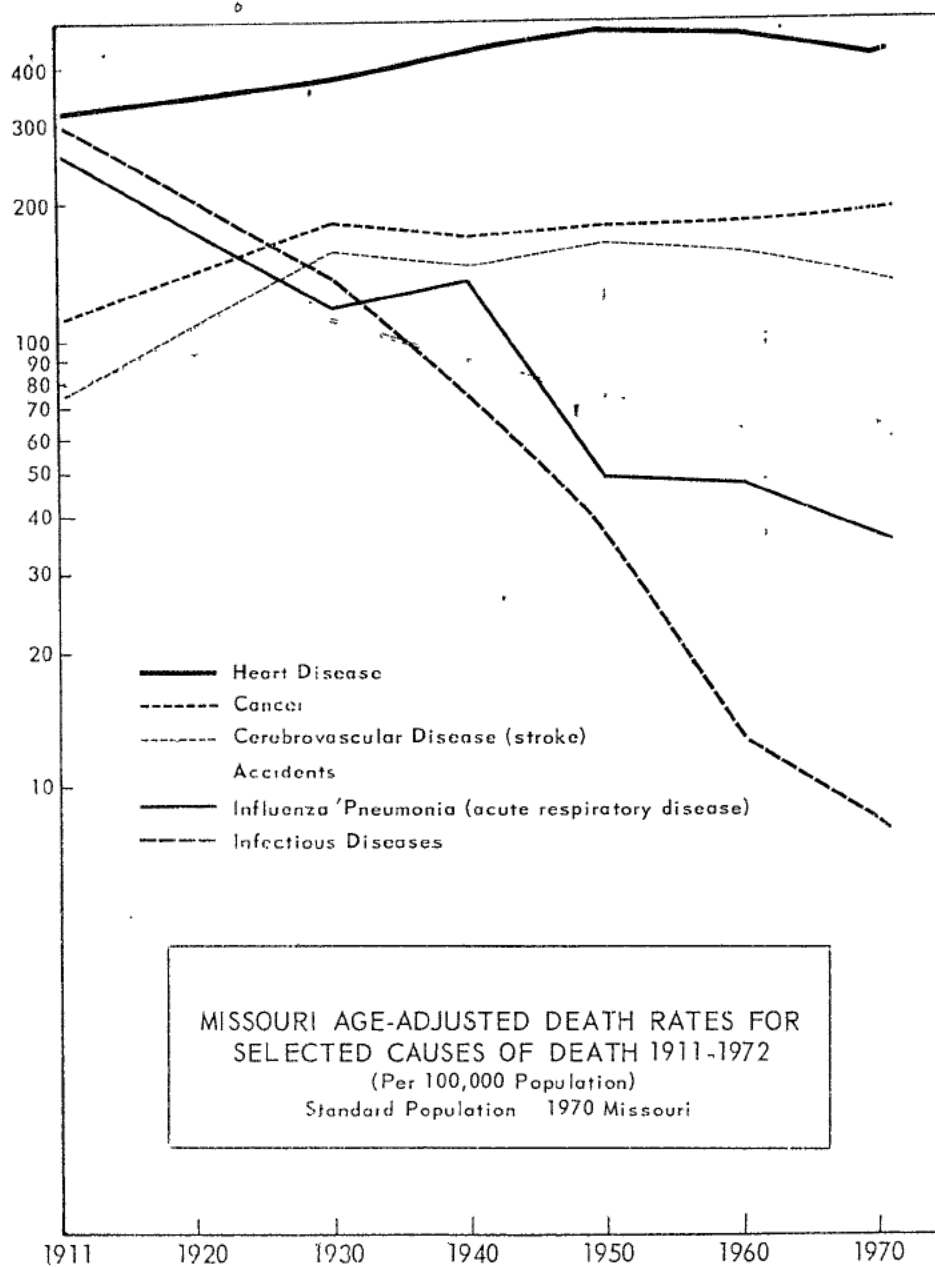


FIGURE 2-2

Source: Missouri State Board of Health, Vital Statistics, 1911-1934 and 1937-1944; Division of Health of Missouri, Vital Statistics Reports, 1945-date; Special Reports of the United States Bureau of the Census, 1935-36. Population estimates 1911 to 1950 taken from United States Bureau of the Census Release, Series P-25, No. 139, June 27, 1956; 1951-1959 and 1961-date as computed by the Division of Health of Missouri; 1960 and 1970, taken from the United States Census of Population. Recorded data 1911 to 1944 and Resident data 1945 to date.

Year	Live Births	Deaths	Year	Live Births	Deaths	Year	Live Births	Deaths	Year	Live Births	Deaths
1911	22.3	13.1	1926	18.7	10.0	1941	17.4	11.4	1956	23.1	10.7
1912	22.6	12.6	1927	18.6	11.4	1942	19.0	11.0	1957	23.1	11.3
1913	22.1	12.4	1928	17.6	12.6	1943	20.2	12.0	1958	22.8	11.0
1914	21.3	12.0	1929	16.8	12.2	1944	19.7	11.9	1959	23.3	11.0
1915	20.5	11.7	1930	17.0	11.8	1945	18.7	12.1	1960	22.6	11.2
1916	20.8	12.7	1931	16.2	11.9	1946	21.5	11.3	1961	22.3	10.8
1917	19.3	13.1	1932	16.0	11.7	1947	23.4	11.6	1962	21.3	11.1
1918	19.2	15.6	1933	15.3	11.5	1948	22.1	11.1	1963	20.4	11.4
1919	18.2	11.7	1934	15.9	12.3	1949	21.5	11.1	1964	19.8	11.1
1920	19.2	12.5	1935	15.1	11.4	1950	21.6	11.0	1965	18.1	11.2
1921	19.5	10.6	1936	14.7	12.8	1951	22.5	11.0	1966	17.4	11.5
1922	18.7	11.2	1937	15.1	11.9	1952	22.4	11.2	1967	16.6	11.2
1923	19.3	12.1	1938	15.7	11.3	1953	22.5	11.1	1968	16.4	11.5
1924	19.7	11.5	1939	15.8	11.3	1954	22.8	10.7	1969	16.9	11.3
1925	19.4	11.7	1940	16.5	11.6	1955	22.7	10.4	1970	17.2	11.0

FIGURE 2-3



MISSOURI AGE-ADJUSTED DEATH RATES FOR
SELECTED CAUSES OF DEATH 1911-1972
(Per 1,000 Population)
Standard Population = 1970 Missouri

Source: Missouri Center for Health Statistics, Missouri Monthly Vital Statistics, Vol. 8, No. 4, June, 1974.

and the mortality trends, 1911-1972 for the current five leading causes of death. Sharp decreases also are shown for influenza/pneumonia mortality, which fell from 254 deaths per 100,000 population in 1911 to just 34.6 in 1972. At the beginning of this time period, influenza/pneumonia and infectious disease accounted for more than one-third of all deaths in Missouri, as compared with the present when these diseases cause fewer than one in 25 deaths.

The age-adjusted death rate trends of heart disease, cancer, stroke and accidents feature less dramatic changes than those for the infectious and acute respiratory diseases. These four leading causes, however, have increasingly represented a larger proportion of total deaths. In 1972, 73 percent of all deaths resulted from either heart disease, cancer, stroke, or accidents, as compared with just 23 percent in 1911. This large increase reflects a gradual aging of the population as well as the upward trends in the age-adjusted death rates for each of these causes except accidents.

Persons aged 65 and over accounted for 76 percent of the deaths during 1972 caused by heart disease, cancer and stroke, diseases which primarily affect the elderly. The percentage of the Missouri population aged 65 and over has grown steadily from 4.6 in 1911 to 12.0 percent in 1970, thus contributing to the increases in mortality from the state's three leading causes of death.

Between 1911 and 1950, the age-adjusted death rates for the current three leading causes of death all increased substantially: heart disease went from 313.1 deaths per 100,000 population to 477.6, a 53 percent rise; cancer increased 58 percent, or from 111.3 to 176.0 deaths per 100,000 and stroke jumped from a rate of 75.7 to 160.4, or 112 percent increase. Since 1950, however, all of the five leading causes except cancer have declined in rate: heart disease - 12 percent; stroke - 19 percent; accidents - 20 percent; and influenza/pneumonia - 27 percent. The cancer age-adjusted mortality rate increased from 176.0 in 1950 to 189.5 deaths per 100,000 population in 1972.

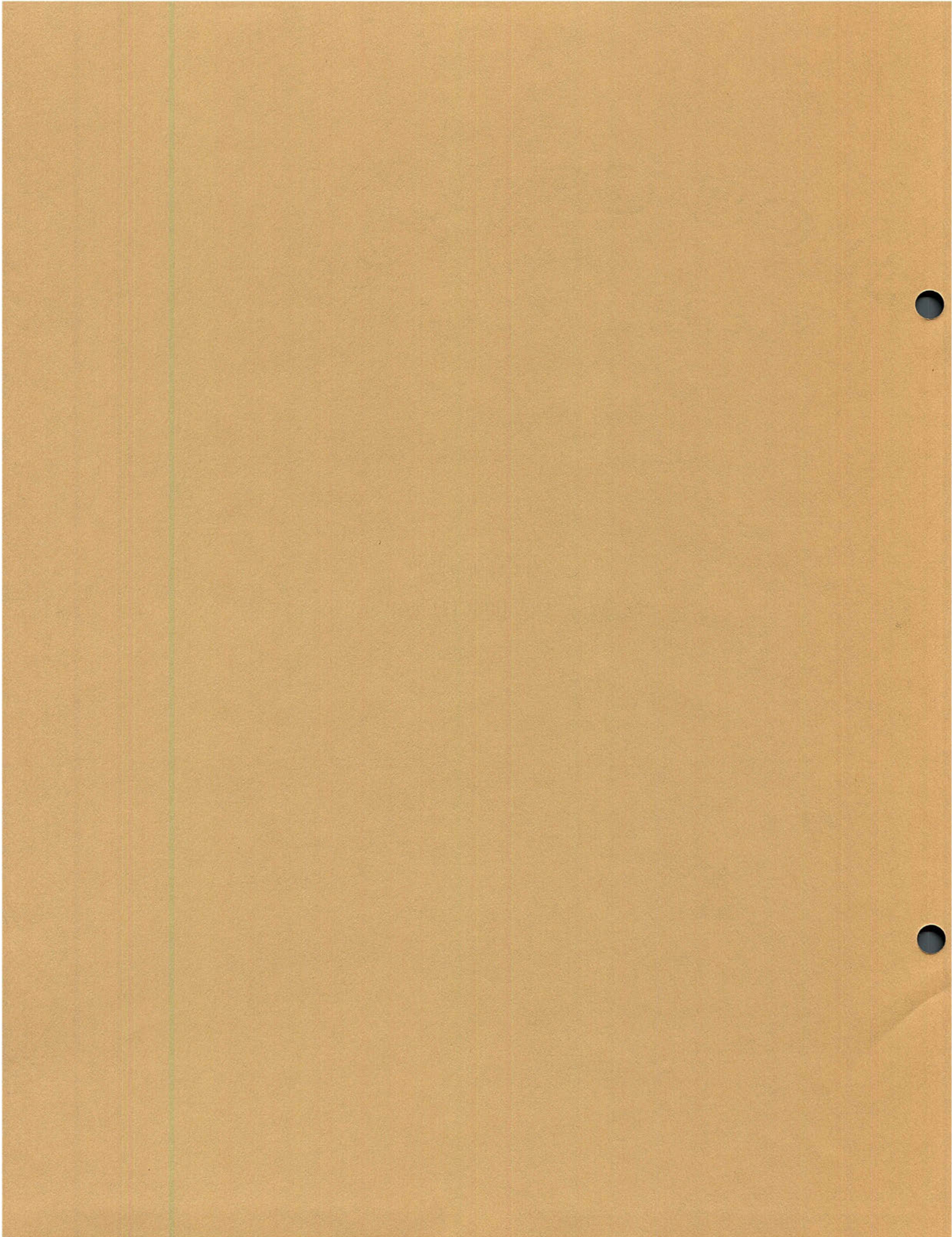
The 20 percent decline in the overall accidental death rate has been accomplished despite an increase in motor vehicle deaths. While the motor vehicle rate increased from 24.1 to 30.4 deaths per 100,000 population between 1950 and 1972, the rate for all other accidental deaths declined from 48.4 to 27.8.

When interpreting Figure 2-4, it should be noted that changes in the International Classification of Diseases have affected the rates of certain causes of death during the years represented.

BIBLIOGRAPHY

1. "Estimates and Projections of Population in Missouri, 1970 to 1990," Division of Budget and Planning, Office of Administration, State of Missouri, in cooperation with Public Affairs Information Service, College of Business and Public Administration, University of Missouri - Columbia, September, 1977.
2. Profiles of Missouri's Regional Planning Commissions, Extension Division, University of Missouri - Columbia, Hugh Denny, Editor, 1973.
3. Censuses of Population, U.S. Bureau of Census, 1950-1970.
4. Censuses of Social and Economic Characteristics, U.S. Bureau of Census, 1950-1970.
5. Census of Housing, U.S. Bureau of Census, 1950-1970.

CHAPTER 3
HEALTH STATUS AND HEALTH SYSTEMS ANALYSIS



SECTION 3.1
INTRODUCTION

Health Status

The use of illness (morbidity), death (mortality), and surrogate (e.g., socio-economic) indicators to measure health status presents both conceptual and informational problems. The present state of the art in health planning is such that measurement of the relative wellness of the population is necessary in order to determine 'where we are' and 'where we want to go'. Problems in obtaining accurate and specific data in a timely manner, particularly morbidity data, have been widely acknowledged by health officials. Generally, data can be obtained for traditional indicators on a statewide basis while on a sub-state level, or for specific conditions or subgroups of a population the availability of data is limited in both amount and specificity.

What has been attempted here is a twofold approach: 1) to provide benchmarks that illustrate the relative wellness of the population within Missouri and in comparison to contiguous states and the U.S., and 2) to determine specific problem areas or 'hot spots' relative to the overall health status of the population.

Due to resource and time constraints the Missouri SHCC will not address or establish indicators for every element of every 'human condition' in its State Health Plan. However, as improvements in both data gathering and the conceptual use of data occur, the Missouri SHCC will make every effort to incorporate the latest and most accurate information in this and subsequent editions of the State Health Plan.

Health System

The organization, financing, and utilization of health care services are of major significance in shaping the health status of Missourians. Health care consumers have been highly concerned when they hear that Americans are not among the most healthy people in the industrialized world while realizing at the same time that the U.S. is the wealthiest nation in the world.

The present economic situation in the U.S., public demand for changing the structure of social institutions, and the increasing awareness of health problems is stimulating constructive examination and change in the health care system.

However, the need for change must not only be recognized; it must be critically evaluated. Change requires establishing a firm base from which to begin. The Missouri SHCC hopes that the health systems analysis, contained in this plan, will provide positive guidance for future development of the health system in Missouri.

SECTION 3.2
HEALTH STATUS OF MISSOURI RESIDENTS

INTRODUCTION
GENERAL HEALTH STATUS
MATERNAL AND CHILD HEALTH STATUS
ADOLESCENT THROUGH MIDDLE LIFE
HEALTH STATUS
HEALTH STATUS OF THE AGED

Introduction

A number of approaches have been used to evaluate the health status and plan for the health needs of Missourians. However, the foundation of any serious health status evaluation must be statistical. In population-based or need-based planning, the current health status of the population determines the need for a specific system of health services.

Information for population-based planning is normally collected from a variety of sources. Health professionals provide valuable insight on utilization and service needs. A community forum approach (normally in the form of public meetings) is employed to solicit health consumer perceptions. Quantitative analysis of rates (per population) of those persons under treatment is used to determine the incidence of medical problems. Finally, indicators of social well-being, related to health, are identified in order to make judgments about the prevalence of unmet needs.¹ This health status section deals specifically with the last two approaches.

Under P.L. 93-641, one of the key responsibilities is improving the health status of the state's population. In using the term "health status", a problem of definition is encountered. The World Health Organization defines health as "a state of complete physical, social, and mental well-being and not merely the absence of disease or infirmity." This definition best articulates what is currently referred to as "health". Historically, the definition of health has evolved into a comprehensive definition of the 'complete person'. Unfortunately, our capabilities for determining what is a 'complete person', in a health-related sense, are restricted due to data limitations in morbidity indicators as well as mortality data. This section will not comprehensively describe 'health' as it is defined in a holistic sense, as much as it will be concerned with a selective sketch of morbidity, mortality, and psycho-social adjustments. Despite this limitation, the relative levels of wellness and illness in this analysis can be derived and should be considered key determinants of a population's health status. Once the level of a population's health status can be determined, the information can be utilized in planning for the reduction in the numbers of unnecessary early deaths and incapacitating illnesses.

The cohorts of this health status analysis are categorized as follows: 1) general health status indicators; 2) maternal and child health status; 3) adolescent through middle life health status; and 4) health status of the aged. The desired outcome of this analysis is to improve the capabilities for determining those groups most 'at risk'.

I. GENERAL HEALTH STATUS

1. Mortality

Major Causes of Death - Desired Status

Death rates are the oldest general measure of the health status of a population. Historically, they have been useful in documenting progress or decline in health status. Death rates are subject to influence by two components - the onset of disease or an event (i.e., an accident) and the subsequent death (case-fatality). These two components represent possible intervention points; if a disease is preventable, then onset could be avoided, and if there is an effective treatment, death could be avoided. The preferred strategy would be to reduce incidence by preventing onset, and thus reduce disability (morbidity). Medical treatment which is directed at decreasing case-fatality often cannot avert disability or impairment of the survivor.² To be sure, all humans eventually number in the mortality statistics, but it is in averting the untimely or preventable death where progress can be made.

Missouri's overall death rates have traditionally been higher than National rates. The increased number of older persons in the state is an important factor linked to the higher rates. It is desirable, nevertheless, that Missouri rates compare favorably to U.S. rates when age cohorts are examined. This analysis will be done later in this section.

The lowest mortality rate for heart disease in the continental United States in 1975 was reported by New Mexico. The rate (175.7/100,000)³ should become Missouri's long range desired status.

Similarly, for cerebrovascular disease, the State of New Mexico reported a mortality of 57.8 per 100,000 in 1975.⁴ This was also the lowest in the continental U.S. that year. This rate should become Missouri's long range desired status.

Concerning cancer, Missouri should prevent an increase in the rate from this year's figure. A mortality rate of 195/100,000 population represents a desired status for Missouri in 1984.

Influenza and pneumonia deaths should be reduced by 50 percent to 13.9 deaths per 100,000 population. Mortality rates in Missouri are shown in Table 3.2-1.

Major Causes of Death - Comparative Analysis

TABLE 3.2-1
TOTAL DEATH RATE PER 1,000 POPULATION - 1977

U.S.	8.8
Missouri	10.1
* HSA I	9.1
HSA II	11.2
* HSA III	9.3
HSA IV	11.0
HSA V	11.3

* Missouri only.

Table 3.2-1

Source: Missouri State Center for Health Statistics, unpublished data, September, 1978.

The five leading causes of death in Missouri are heart disease, cancer, cerebrovascular disease, influenza/pneumonia, and accidents. The incidence of the first four are shown in Table 3.2-2. Accidents will be addressed in a later section.

TABLE 3.2-2
DEATH RATE BY MAJOR CAUSE PER 100,000/POPULATION
1972 AND 1977

Area	Heart Disease		Cancer	
	1972	1977	1972	1977
U.S.	361.3	331.6	166.6	178.4
Missouri	423.8	384.0	188.7	195.3
* HSA I	302.8	312.3	161.0	176.9
HSA II	531.9	432.9	210.9	203.7
* HSA III	390.0	371.1	180.0	196.3
HSA IV	457.3	409.9	193.0	202.7
HSA V	459.0	419.8	194.0	197.3
Area	Cerebrovascular Disease		Influenza/ Pneumonia	
	1972	1977	1972	1977
U.S.	100.9	84.4	29.4	23.1
Missouri	130.5	106.0	34.7	27.8
* HSA I	98.4	97.7	32.4	21.6
HSA II	169.4	137.8	43.1	34.1
* HSA III	100.0	84.4	30.0	22.6
HSA IV	163.4	117.9	39.0	32.6
HSA V	155.0	116.7	50.0	38.6

* Missouri Only.

Source: Missouri State Center for Health Statistics, unpublished data, September, 1978, and Annual Report - 1972.

Major Cause of Death - Problem Description

Of the four major causes of death, cancer is the only one on the rise.

Negative environmental effects which impact and exacerbate certain cancers are normally associated with: lower socio-economic status,⁶ exposure to organic chemicals that are carcinogenic in laboratory animals, radiation exposure, harmful occupational exposures, and air pollution. Certain other cancer risks which are related more to lifestyle are associated with: methods of cooking foods, choice of certain foods, obesity, alcohol intake, and (perhaps the most important and directly linked) cigarette smoking. Cigarette smoking is linked not only to lung cancer, but also cancers of the larynx, oral cavity, urinary bladder, and pancreas.⁷

Heart disease is still the number one killer, despite its decline in incidence. The reason for this decline is due partly to improved medical intervention such as coronary care units and the increased knowledge of cardio-pulmonary resuscitation. The improvement may also be attributed to the fact that many Missourians have changed their life styles to reflect more healthful practices. People are reducing the risk factors by altering patterns in diet, weight, smoking, and exercise.

Cardiovascular disease may cause severe disability. It renders its victims invalids for years through strokes, chronic angina pectoris, and peripheral vascular diseases which result in pain and often the need for limb amputation.⁸ Of these symptoms, stroke is the most widely known outcome. For both heart disease and cerebrovascular disease, heredity is an important factor. Heredity seems to play a role in predisposing factors to cardiovascular disease such as high cholesterol, diabetes, and hypertension. The best way to counteract these heredity factors is to conscientiously adhere to healthful behaviors. Psycho-social stress may not be a causative agent in vascular disease, however, it can contribute to the severity of illness.⁹ It should be emphasized that stroke can often be prevented and controlled through the screening of persons with hypertension and through drugs.

The incidence of influenza and pneumonia has declined in Missouri although the mortality rate is 17 percent higher than it is for the U.S. This appears excessive despite Missouri's greater proportion of aged persons, particularly when immunization is available as a prevention mechanism.

Major Causes of Death - Goals

GOAL: BY 1984, MORTALITY DUE TO HEART DISEASE SHOULD BE REDUCED BY 10 PERCENT TO 345.6 DEATHS PER 100,000 POPULATION.

GOAL: BY 1984, CEREBROVASCULAR MORTALITY SHOULD BE REDUCED BY 20 PERCENT TO 84.8 DEATHS PER 100,000 POPULATION.

GOAL: BY 1984, THE INCIDENCE OF INFLUENZA AND PNEUMONIA SHOULD BE REDUCED 25 PERCENT TO 17.4 DEATHS PER 100,000 POPULATION.

GOAL: BY 1984, THE RATE OF CANCER MORTALITY SHOULD NOT INCREASE.

Life Expectancy - Desired Status

Life expectancy is defined as the average number of years remaining in a person's life at a particular age and is determined by race, sex, or other characteristics using age-specific mortality rates for the population with that characteristic. Simply, life expectancy is the most probable number of years that an individual in a specific population will live, provided he/she remains in that environment.

The rapid increase in life expectancy at birth during the 20th century has brought about many changes for Missourians. Living a longer life has increased the length of working life and has contributed to a fuller family life. Longevity has also resulted in the largest number of 'aged' persons in the history of Missouri. It should be noted, however, that despite the vast growth in the health care industry and its technology, the life expectancy of the 45 year old male has increased by only 4 years since 1900.

Life expectancy is an indicator which should be comparable to the U.S. and other similar states. Inherent in the increase in life expectancy is that we must work towards the more far-reaching goal of reducing preventable deaths and lowering their incidence to the irreducible minimums. A comparison with U.S. figures is shown in Table 3.2-3.

Life Expectancy - Comparative Analysis

TABLE 3.2-3
LIFE EXPECTANCY
1977

Ages	Missouri	U.S.
0-1	72.9	73.2
40-45	36.0	36.6
65-70	16.0	16.3

Source: Missouri State Center for Health Statistics,
unpublished data, September 1978.

The State of Missouri is ranked 26th in respect to average life expectancy for the total population of the United States. The ten highest ranked states are: Hawaii, Minnesota, Utah, North Dakota, Nebraska, Kansas, Iowa, Connecticut, Wisconsin, and Oregon.

Life Expectancy - Problem Description

When one looks at the twenty highest ranked states, many comparable health problems can be found.¹⁰ Missouri in comparison, has many problems which have contributed to its present position in the ranking by life expectancy. Area IV and V share many of the problems that face the rural poor in the South, while the metropolitan areas have numerous health problems related to the large proportions of low income minority

residents. In addition, there is much diversity in these high risk groups, each having multifaceted needs. Each indicator analyzed during the course of this health status assessment can be considered a factor related to life expectancy in Missouri.

Life Expectancy - Goals

GOAL: BY 1984, THE LIFE EXPECTANCY OF MISSOURI RESIDENTS SHOULD EQUAL OR EXCEED THE 1984 U.S. AVERAGE LIFE EXPECTANCY.

2. Morbidity

Limitation of Activity Due to Chronic Conditions - Desired Status

Since Missouri has a relatively large proportion of aged residents, it would be expected to have a greater proportion of persons with limitations of activity due to chronic conditions, such as arthritis, cardiovascular disease, visual and hearing impairments, and physical handicaps. However, this situation only reinforces the need to offset much of this limitation of activity through prevention, treatment, and rehabilitation services. By emphasizing these methods of intervention, Missouri can reduce the overall number of disabilities and possibly postpone onset of the damaging effects of a considerable number of disabilities.¹¹

Limitation of Activity Due to Chronic Conditions - Comparative Analysis

Table 1 in the appendix under Section 3.2 exhibits estimates of the extent of limitation of activity due to chronic conditions for citizens of Missouri, the U.S., and the North Central Region. These estimates are derived from the Health Interview Survey, which collects information on a continuing basis by means of a probability sample of households, nationwide. The states included as North Central Region are: Michigan, Ohio, Indiana, Illinois, Wisconsin, Minnesota, Iowa, North Dakota, South Dakota, Nebraska, and Missouri.¹²

In Missouri, 17 percent of the population is limited with respect to activity. This figure is approximately 3 percent greater than the figures for the United States and the North Central Region. In addition, Missouri has more persons limited in amount or kind of activity and more persons who are unable to carry on major activity.

Interestingly, there is less than a 1 percent difference in the proportion of Missouri's non-white population who are limited in activity, in comparison to the affected non-white percentage for the United States and the North Central Region.

Limitation of Activity Due to Chronic Conditions - Problem Description

As revealed in the comparative analysis, a relatively high percentage of Missouri's population is limited in activity. This illustrates the need to emphasize prevention and geriatric rehabilitative care. In addition, because Missouri has such a large proportion of its population that is limited in activity, the need is increased for such services as home delivered meals and homemaker/home health aides. Because of the nature of the data, no goals will be developed for this indicator. The data is derived from Health Interview Survey and is the product of a

synthetic estimating procedure. Whenever this procedure is used to derive Missouri estimates from U.S. data, the estimate cannot be used with complete accuracy. The rate will change only as the U.S. rate changes or the demographics of the Missouri population changes.

Dental Health - Desired Status

For good dental health, persons of all ages should see a dentist annually for prevention and detection of dental problems.

Dental Health - Comparative Analysis

Table 2 in the appendix under Section 3.2 illustrates how annual dental visits in Missouri compare to the U.S. and the North Central Region based upon the Health Interview Survey estimates of 44 percent in Missouri. As indicated, Missouri has a considerably smaller percentage of persons (by 5 - 6 percent) with an annual dental visit.

Dental Health - Problem Description

Poor dental health is definitely linked to lessening amounts of dental prophylaxis. Presently available data indicates that the dental health of most Missourians does not compare favorably with the surrounding states or the U.S. Only 44 percent of Missourians visit a dentist annually. This problem will be examined by age groups in other parts of this section.

Dental Health - Goals

No goals will be established at this time.

Tuberculosis - Desired Status

Tuberculosis is a communicable disease usually affecting the lungs. It is caused by the tubercle bacillus. The organism enters the body through inhalation or ingestion, and can remain dormant for extended periods of time. Tuberculosis has been known as the disease of poverty. Overcrowding, poor nutrition, substance abuse, and other such factors give rise to the incidence of tuberculosis. Within the past thirty years, great strides have been taken in the treatment of tuberculosis. Drug therapy has grown in sophistication to the point where therapy results in the recovery of 95 percent of the initially treated cases. Patient cooperation in the taking of these drugs is crucial. However, cooperation is sometimes difficult to achieve as a significant proportion of the cases are from among the lowest socio-economic strata. Resistance to the drugs may also hamper treatment.¹³ It is desired to reduce tuberculosis to a small number of isolated cases and a morbidity

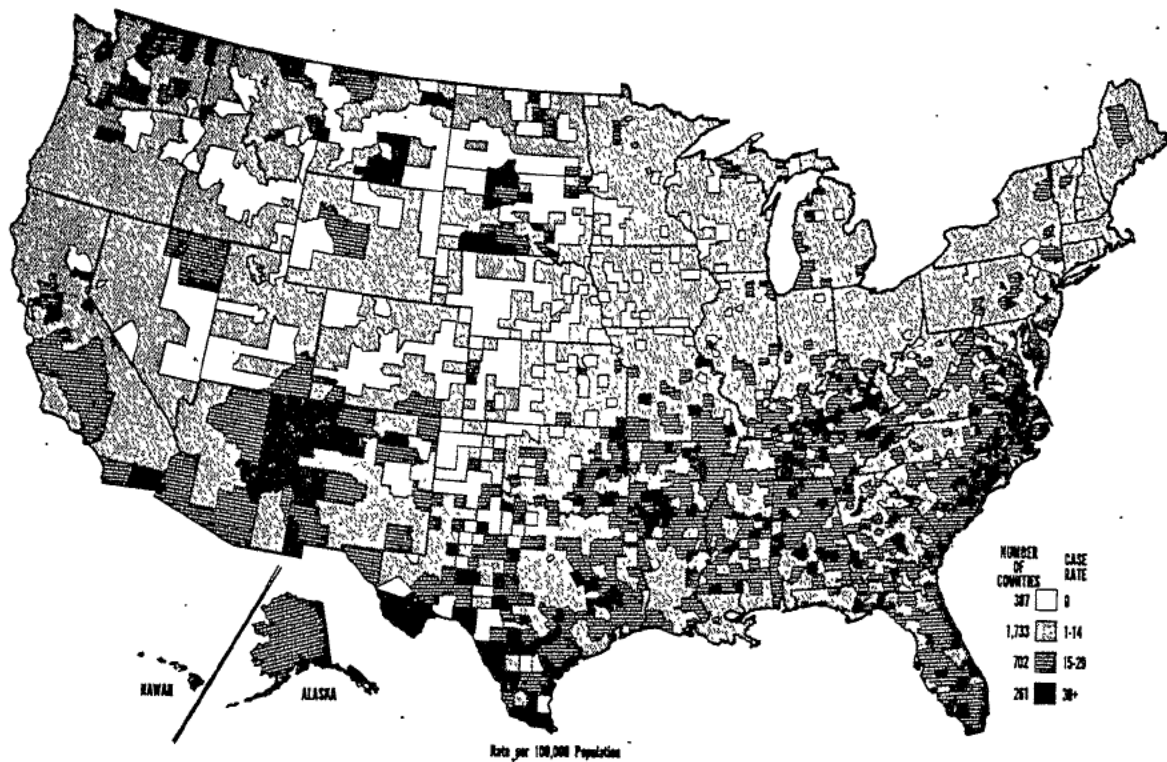
rate of 2 cases per 100,000 population. In light of the changes in preventing and treating tuberculosis, it is not unrealistic to think in terms of reducing the incidence of tuberculosis to a very small number of isolated cases. The potential for the elimination of this disease depends greatly on improvements in the general living conditions of much of our population.

Tuberculosis - Comparative Analysis

Within Missouri, pockets of high tuberculosis morbidity occur in each of the five health service areas. Comparatively, in 1960, the tuberculosis morbidity rate was 33 per 100,000 population, while in 1970 it was 15 per 100,000 population, and in 1975 the rate dropped to 12 per 100,000 population.¹⁴ The map which follows depicts how Missouri compares to other states for the period 1974 to 1976.

MAP 3.2-1

TUBERCULOSIS — Reported Average Cases per 100,000 Population by County, United States, 1974-1976



Source: Center for Disease Control, Reported Morbidity and Mortality in the U.S., DHEW, September 1978, p. 7.

Tuberculosis - Problem Description

Map 3.2-1 indicates that Missouri shares a high tuberculosis morbidity rate with the neighboring states of Oklahoma, Arkansas, Kentucky, and Tennessee as well as with other southern states. In contrast, other states in the North Central Region do not share this high prevalence of tuberculosis with Missouri.

Missouri must continue an aggressive public health effort in combating tuberculosis including public health education, epidemiological studies, control of occupational contaminants, and routine x-ray examinations of high risk groups and all tuberculin positive persons.¹⁵

Tuberculosis - Goals

GOAL: BY 1984, THE STATEWIDE MORBIDITY RATE FOR TUBERCULOSIS SHOULD NOT EXCEED EIGHT CASES PER 100,000 POPULATION.

3. Accidental Deaths and Injuries and Violent Deaths

Accidental Deaths - Desired Status

All accidents are theoretically preventable. However, complete elimination of mortality due to accidents has always been considered an unlikely possibility.¹⁶ Efforts are normally aimed at reducing the incidence and prevalence of accidents. Prevention programs designed to reduce the incidence of poisoning and drowning, and public safety programs aimed at avoiding falls and the outbreak of fire are key strategies. Emergency medical services are also important as a 'reactive' mechanism within the health care system to reduce the mortality rate from accidents.¹⁷ The mortality rate for accidents includes: motor vehicle accident deaths (which have been singled out for analysis because of their importance), poisoning, falls, fires, and drowning. Prevention of motor vehicle deaths is the key to significantly lowering the number of accidental deaths. Important prevention strategies must include continuing public education efforts aimed at increasing the cooperation among Missourians in complying with the 55 m.p.h. speed limit, and a reduction in the use of alcohol. (In Missouri, in 1977, there were approximately 25,121 arrests for driving while intoxicated that were reported to the Missouri State Highway Patrol's crime index.) Other efforts aimed at lowering the auto accident mortality rate include emphasis on highway safety improvement and automobile safety design.

Within the continental U.S., in 1975, Connecticut had the lowest accidental death rate of 32.0 per 100,000 population. In this plan, it will be considered the presently desired minimum.

Accidental Deaths - Comparative Analysis

In Missouri since 1972, the mortality rate from accidents has decreased by 15.2 percent while for the U.S. it has decreased 14.2 percent. However, in both years (1972 and 1977) Missouri's rate was higher (see Table 3.2-4).

As table 3.2-5 illustrates, our motor vehicle death rate is higher than the national rate, although based upon the Traffic Fatality Rate per 100 million miles of travel as computed by the Highway Patrol, our fatality rate has been at record lows since the initiation of the 55 miles per hour speed limit. Table 3 in the appendix under Section 3.2 shows the Traffic Fatality Rate per 100 million miles of travel.

TABLE 3.2-4
ACCIDENTAL DEATH RATE IN MISSOURI PER 100,000 POPULATION

Area	1977	1972
U.S.	46.8	54.6
Missouri	49.6	58.5
*HSA I	46.2	55.1
HSA II	56.8	72.6
*HSA III	39.4	50.0
HSA IV	63.6	73.3
HSA V	60.6	77.0

Source: Missouri State Center for Health Statistics, Unpublished data (September 1978), and Annual Report - 1972.

TABLE 3.2-5
1977 DEATHS FROM MOTOR VEHICLE ACCIDENTS
PER 100,000 POPULATION

U.S.	22.3
Missouri	24.4
*HSA I	22.6
HSA II	28.5
*HSA III	18.1
HSA IV	35.7
HSA V	28.5

Source: Missouri State Center for Health Statistics, unpublished data, September 1978.

* Missouri only.

Accidental Deaths - Problem Description

The greater number of accidental deaths in Missouri as compared to the U.S. may be attributed to the higher proportion of the aged who are at a greater risk of accidents. The rural nature of the state and the large number of secondary roads may also contribute to the high overall incidence of accidental deaths (e.g., farm related accidents, motor vehicle accidents). Health service areas which are predominantly rural (Areas II, IV, and V) have higher accidental death rates and higher motor vehicle accidental deaths than do the urban health service areas (Areas I and III). The present overall decline in Missouri's accident rate is largely due to a decline in automobile deaths.

Accidental Deaths - Goals

GOAL: BY 1984, MORTALITY DUE TO ACCIDENTS SHOULD BE REDUCED BY 16 PERCENT TO 41.7 PER 100,000 POPULATION.

Suicide - Desired Status

Mortality due to suicide is a surrogate indicator of mental well-being and physical health.

Internationally, Greece has one of the lowest suicide rates (3.4 per 100,000 population) and Finland has one of the highest (25.1).¹⁸ Missouri is midway between these two extremes. Studies have indicated that serious or successful suicide attempts seem to be more predominant among older persons, males, those divorced, single, widowed, and those who are socially isolated.¹⁹ Adolescent suicide is on the rise as well. We should work toward reducing these rates through strategies affecting a potential victim's environment, psycho-social stress, and wellness orientation.

Suicide - Comparative Analysis

Table 3.2-6 indicates that Missouri's suicide rates exceed the nation's due to the very high mortality in HSA's I, IV, and V. Analysis developed in the 1979 Health Systems Plan for HSA I, reveals that suicide is the area's seventh ranking cause of death, while in Missouri, Kansas, and the United States, it is ranked eighth. In 1972, the Missouri mortality rate for suicide was 11.0 per 100,000 population compared to the 1977 rate of 13.2 per 100,000 population.

TABLE 3.2-6
SUICIDE RATES
1977

U.S.	12.5
Missouri	13.2
*HSA I	16.0
HSA II	12.1
*HSA III	12.0
HSA IV	13.7
HSA V	14.0

* Missouri only.

Source: Missouri State Center for Health Statistics, unpublished data, September 1978.

Suicide - Problem Description

The significance of suicide in Missouri, and in certain high incidence areas in particular, represents a very important health status problem. As is evident, suicide is on the increase. If the increasing rate of suicide is to be slowed, the mental health of the population must be improved.

Suicide - Goals

GOAL: BY 1984, THE COMPOSITE STATEWIDE SUICIDE RATE SHOULD NOT EXCEED THE PRESENT STATEWIDE RATE, AND NO INDIVIDUAL HEALTH SERVICE AREA SHOULD EXCEED 14.5 DEATHS PER 100,000 POPULATION.

Homicide - Desired Status

According to Saul in his book, The Hostile Mind:

"Hostility is a disease to be cured and prevented like cancer, tuberculosis, or smallpox . . . its cure will result in healthier, better living - not only for society in general, but for each individual in particular . . ."20

Despite the fact that homicide is not really thought of as a medical problem, except in the Emergency Medical Service arena, it is one of the major killers, particularly among certain population cohorts. Multi-disciplinary strategies for its reduction must be planned for in the mental health, social services, and law enforcement networks.

Homicide - Comparative Analysis

Missouri's homicide rate exceeds the U.S. rate as Table 3.2-7 indicates. This is brought about by the higher rates in HSA I and III. Homicide is ranked as the eleventh leading cause of death in Missouri and the nation, but in HSA I it is the tenth leading cause of death.²¹ When the homicide rate in Missouri's two metropolitan HSA's (I and III) is compared with another mid-western metropolitan HSA, in this case, the HSA which includes Cleveland, Ohio and surrounding counties, Missouri compares favorably. The homicide rate in this Ohio HSA (Metropolitan Health Planning Corporation) in 1974 was 16.1 per 100,000 and was the eight leading cause of death. The population served by this metropolitan Ohio HSA is 2,251,367 (1975) which is 32 percent larger than Missouri's Area I 1975 population and 7 percent smaller than Area III's 1975 population.²²

TABLE 3.2-7
HOMICIDE DEATH RATE PER 100,000 POPULATION
1977

U.S.	9.0
Missouri	9.9
*HSA I	13.2
HSA II	4.3
*HSA III	12.0
HSA IV	4.5
HSA V	5.3

* Missouri only.

Source: Missouri State Center for Health Statistics, unpublished data, September 1978.

Homicide - Problem Description

With homicide mortality increasing, prevention strategies may lie in countering the social conditioning toward violence, improving living conditions and stressful behavior, and in promoting gun control. Because most homicides are shootings, the elimination of easy access to the hand gun has been recognized as a deterrent to the rise of homicide.²³ On a broader basis, societal changes (behavior modification, change in life style and improved economic conditions) could eliminate the original hostility and prevent the underlying causes of homicide.

Homicide - Goals

GOAL: BY 1981, COMPOSITE STATEWIDE HOMICIDE RATES SHOULD NOT EXCEED THE PRESENT STATEWIDE RATE OF 9.9 AND NO HEALTH SERVICE AREA SHOULD EXCEED 12.0 PER 100,000 POPULATION.

4. Socio-Emotional Disabilities

Negative Health Related Characteristics - Desired Status

The numbers of felonious assaults and rapes can also be considered indicators of health status problems. These numbers reflect the magnitude of adjustment problems among the assailants and emotional shock to the victims. The victims normally require both medical care and psychological help. Usually, non-medical interventions, including prevention programs, are of utmost importance in reducing these negative health characteristics. However, emergency medical care and psychological services should be available for those who have fallen victim to these crimes.

Health Related Characteristics - Comparative Analysis

In Missouri, in 1977, according to the State Highway Patrol, approximately 10,570 assaults and 1,445 rapes were reported, and found to be actual offenses. There is, however, great potential for under-reporting such crimes. These crimes share many characteristics with homicide, including a common origin in the expression of manifested hostility.

Health Related Characteristics - Problem Description

Within the purview of health, there is a limit to the impact we can have on the occurrence of such crimes as assault and rape. A. R. Matthews, a lawyer and director of the Project on Mental Illness and Criminal Law of the American Bar Foundation made the following comments on the relationship of criminals and the mentally ill.

"Certainly there are differences between "criminals" and the "mentally ill", but it seems possible that the problems of mental illness and crime lend themselves to similar if not identical methods of handling." He reiterated that, "A wide spectrum of diagnostic and treatment facilities should be made available to the administrators of the criminal law to assist them in the related tasks of preventing crime and dealing effectively with persons legally convicted of criminal acts."²⁴

Health Related Characteristics - Goals

GOAL: THE INCIDENCE OF NEGATIVE HEALTH RELATED CHARACTERISTICS SHOULD NOT BE ALLOWED TO INCREASE.

Alcohol and Drug Abuse - Desired Status

Alcohol and drug abuse are threatening to the health of Missourians. Health problems which can result from the use of alcohol include: cirrhosis of the liver, lowered resistance to infectious disease, nutritional deprivation, and increased risk of certain cancers. Alcohol ingestion and/or abuse by pregnant women may result in damage to the unborn fetus and/or congenital deformities to the newborn (fetal alcohol syndrome). Drug abuse can arise both from the use of illicit drugs and the misuse of legally prescribed drugs. Much can be done through education to combat both alcohol and drug abuse problems.

Alcoholism and Drug Abuse - Comparative Analysis

By 1970 estimates, Missouri was ranked eighth in the nation with respect to the prevalence of alcoholism. The total estimated number of alcoholics was 150,600. The Missouri Division of Alcohol and Drug Abuse Plan for FY 1979 estimates prevalence for "alcohol related problems" at 238,601 for males and 74,343 for females.²⁵ Although the incidence of alcoholism is higher in Missouri than in the U.S., the ratio of men to women is similar.

TABLE 3.2-8
U.S. AND MISSOURI ALCOHOLISM RATE
PER 100,000 POPULATION
1970

Area	Total	Male	Female
U.S.	4,200	7,300	1,300
Missouri	5,090	9,110	1,570

Source: Bureau of the Census, Statistical Abstract of the United States, 1977, U.S. Department of Commerce (Washington, D.C., 1977) p. 115.

TABLE 3.2-9
CIRRHOSIS OF LIVER MORTALITY PER 100,000 POPULATION
1977

U.S.	14.4
Missouri	11.7
*HSA I	11.7
HSA II	8.3
*HSA III	14.9
HSA IV	8.3
HSA V	11.4

* Missouri only.

Source: Missouri State Center for Health Statistics, unpublished data, 1977.

The mortality rate in Missouri, from cirrhosis of the liver, is lower than that of the U.S. Utilizing this same indicator, it was estimated that the Metro Cleveland HSA had a cirrhosis of the liver mortality rate, in 1974, of 18.3 per 100,000 population.²⁶ Comparisons between cirrhosis death rates in Missouri and the U.S. will be examined by specific age cohorts later in this section.

Another indicator of the prevalence of alcohol abuse is the number of arrests for driving while intoxicated (DWI). There were 25,121 arrests in 1977 for driving while intoxicated according to the Missouri State Highway Patrol.

Alcohol and Drug Abuse - Problem Description

As emphasized earlier, efforts aimed at prevention, improving capabilities for attaining a better life style, and adequate treatment are necessary in Missouri in order to decrease the prevalence of substance abuse. The Department of Mental Health, Division of Alcohol and Drug Abuse projects that the rate of alcoholism per 100,000 population in 1984 will be 8,955. The extent of drug abuse and medication misuse, and the toll that they have taken in terms of overdose, addiction, crime, and change in the quality of life, are immeasurable. It has been extremely difficult to document the true extent of the drug abuse and medication misuse problems. However, it is widely known that the problems are extensive and the factors are very real.

Alcohol and Drug Abuse - Goals

GOAL: BY 1984, THE ALCOHOLISM RATE IN MISSOURI SHOULD BE REDUCED TO 5 PERCENT LESS THAN DEPARTMENT OF MENTAL HEALTH PROJECTIONS FOR THAT YEAR.

Developmental Disability - Desired Status

By taking positive steps in the areas where prevention is possible, and through continued research, Missouri could strive toward a long range goal of reducing developmental disabilities. It is also important to give those developmentally disabled persons, now present in Missouri, the care and rehabilitative services they need for their optimum health status. Although most of the causes of developmental disabilities are unknown, steps can be taken to substantially reduce mental retardation.

Developmental Disability - Comparative Analysis

The Missouri State Plan for Developmental Disabilities Services and Facility Construction Program for FY 1978 estimates that there were 252,080 developmentally disabled Missourians in 1978 and projects that there will be 274,581 by 1981. These estimates, limited to those persons substantially impaired, are broken down as follows:²⁷

TABLE 3.2-10
ESTIMATES OF NUMBERS OF DEVELOPMENTALLY DISABLED BY DISABILITY
FOR 1978 AND 1981

	1978	1981
Mentally Retarded	90,633	98,875
Cerebral Palsied	47,575	51,642
Epileptic (not in control through medication)	22,978	24,948
Autistic	255	261
Learning Disabilities	90,641	98,680

The plan also notes that inner city areas plus certain rural counties have a very high proportion of developmentally disabled persons who are members of families below the established poverty levels. There are some rural counties where more than 70 percent of the developmentally disabled persons are eligible for aid under Title XX.²⁸

Developmental Disabilities - Problem Description

Research efforts to learn more about the causes of developmental disabilities are extremely important to their eventual reduction. Most of the causes of mental retardation are unknown; however, it is estimated that alcohol consumption is the greatest known cause of mental retardation.²⁹ This fact re-emphasizes the importance of prevention (e.g., fetal alcohol syndrome). Other known causative factors of developmental disabilities that are subject to prevention include: German measles, Rh incompatibility, prematurity, PKU and syphilis.³⁰ Improvements in lifestyle, environment, and appropriate health care delivery can greatly improve the chances of yet unborn children.

Developmental Disabilities - Goals

GOAL: BY 1981, THE INCIDENCE OF MENTAL RETARDATION SHOULD BE REDUCED BY 10 PERCENT BELOW THE 1981 ESTIMATE OF 274,581 PERSONS.

Mental Illness - Desired Status

The President's Commission on Mental Health has suggested that 15 percent of the nation's population has some form of mental illness. In planning for the desired status, it is more realistic to think in terms of services to help patients improve their health status and quality of life through the control of their mental disturbance rather than decreasing prevalence. However, improvements in living and working environments, behavior modification and stress management are of great importance in reducing the prevalence of mental illness and dysfunction.

Mental Illness - Comparative Analysis

The State Plan for Comprehensive Mental Health Services for fiscal year 1978-1979 estimated the number of persons in need of mental health care in Missouri at 1,227,250. A total of 103,966 persons received care by the Department of Mental Health in 1978; however, the number of Missourians who received care from private psychiatrists and psychologists is unknown.³¹ The Department of Mental Health analyzed utilization data, socio-economic, and demographic characteristics (that have been shown to be surrogate indicators of high risk groups), and identified the areas of Missouri that are most in need of mental health care:

TABLE 3.2-11

HIGHEST NEED AREAS IN MISSOURI ³²	
St. Louis City Inner City Kansas City Washington County St. Francois County Dent County Crawford County Iron County Reynolds County Shannon County Oregon County	Carter County Ripley County Wayne County Butler County Stoddard County Scott County Mississippi County New Madrid County Dunklin County Pemiscot County
COUNTIES OF HIGH NEED (AFTER INDICATORS ARE POPULATION-ADJUSTED)	
Saline County Carroll County Randolph County Howard County Boone County Cooper County Douglas County Howell County Pulaski County	Moniteau County Morgan County Pettis County Camden County Laclede County Wright County Ozark County Texas County

Mental Illness - Problem Description

If progress can be made in each of the areas outlined in this section and the Department of Mental Health can meet its objective to better serve its needy areas, it would represent a significant step in the improvement of severe problem indicators, many of which represent needless suffering.

Mental Illness - Goals

Due to limitations in data and the present state of the art, a quantified goal for improved mental health status will not be given at this time.

II. MATERNAL AND CHILD HEALTH STATUS

1. Mortality

Two major indicators which relate to the health of mothers and children, infant and neonatal mortality, often correlate with socio-economic, racial, education, and marital factors.³³

Infant Mortality - Desired Status

Infant mortality is a broad indicator of the health status of infants and mothers. By definition, an infant death is one that occurs between birth and age 1. Sweden, in 1973, reported an infant mortality rate of 9.6 per 1,000 live births.³⁴ While it is known that most infant deaths are considered to be preventable, the Swedish figure has been used as an "irreducible" minimum within the context of previously described correlations. Missouri should pursue the long range goal of reaching this irreducible minimum and take special care to eliminate the evidently higher infant mortality of non-white infants (Figure 3.2-1).

Neonatal mortality is a subcategory of infant mortality. The neonatal period ranges from birth to the 28th day of life. Prenatal and neonatal care are very effective in reducing neonatal mortality since these deaths are oftentimes more amenable to direct medical intervention.³⁵

Infant Mortality - Comparative Analysis

Infant mortality rates vary throughout the state (Tables 3.2-12 and 3.2-13). The overall statewide infant mortality rate has declined 22.5 percent since 1972; however, high mortality rates in HSA I, parts of HSA III, and HSA V are of concern as are the overall non-white infant mortality rates. Maps 1 and 2 in the appendix under Section 3.2 depict rates for the United States.

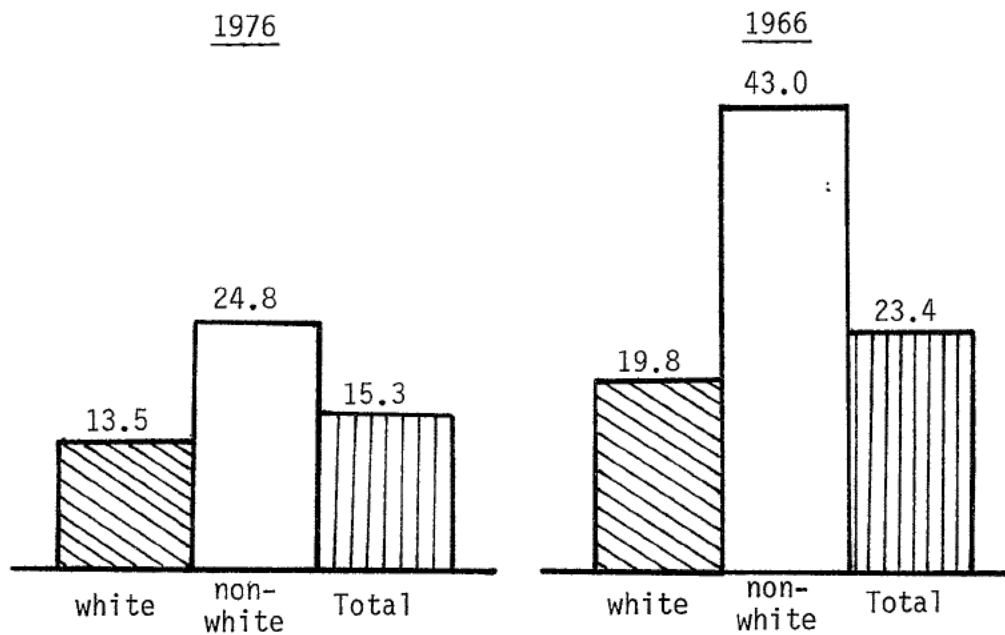
TABLE 3.2-12
INFANT MORTALITY PER 1,000 LIVE BIRTHS

	1977	1972
U.S.	14.00	18.50
Missouri	14.20	18.30
*HSA I	17.08	16.40
HSA II	12.99	17.10
*HSA III	13.50	18.60
HSA IV	13.58	18.30
HSA V	14.60	20.30

* Missouri only.

Source: Missouri State Center for Health Statistics, unpublished data, (September 1978), and Annual Report 1972.

FIGURE 3.2-1
INFANT MORTALITY IN MISSOURI BY RACE



Source: Missouri State Center for Health Statistics, Missouri Vital Statistics, 1976, (Jefferson City) p. 44.

TABLE 3.2-13
NEONATAL MORTALITY PER 1,000 LIVE BIRTHS
1975

U.S.	11.60
Missouri	11.40
HSA I	10.40
*HSA II	13.75
HSA III	11.80
*HSA IV	13.00
*HSA V	14.20
*1971-1975	

Source: Missouri Health Systems Plans and calculations based upon data furnished by the Missouri State Center for Health Statistics.

Infant Mortality - Problem Description

A large gap still remains between the 1977 Missouri infant mortality rate and the irreducible minimum. However, significant progress has been made since 1972 when the rate was 18.3 per 1,000 live births.

In attempting to reduce infant mortality, emphasis should be placed upon those population groups and areas with high mortality. Significantly, those areas of the state that exhibit favorable conditions relative to maternal and child health status (e.g., high socio-economic status) follow much more closely the national and state trends of lowered infant and neonatal mortality. Consequently, those areas that exhibit low health related status also exhibit a correspondingly low maternal and child health status. For further discussion, see Maternal and Infant Health Services.

Infant Mortality - Goals

GOAL: BY 1984, THE MISSOURI INFANT MORTALITY RATE SHOULD BE REDUCED FROM THE PRESENT RATE OF 14.2 TO 12 PER 1,000 LIVE BIRTHS WITH NO POPULATION GROUP OR HEALTH SERVICE AREA EXCEEDING 17 PER 1,000 LIVE BIRTHS.

GOAL: BY 1984, THE MISSOURI NEONATAL DEATH RATE SHOULD BE REDUCED FROM THE 1975 RATE OF 11.4 TO 10.5 PER 1,000 LIVE BIRTHS WITH NO HEALTH SERVICE AREA EXCEEDING 12 DEATHS PER 1,000 LIVE BIRTHS.

Fetal Mortality - Desired Status

A fetal death is one which occurs between 20 weeks gestation and birth. These deaths directly correlate with maternal life style and environmental factors. Many of these deaths could be positively influenced by efforts aimed at improving the health of mothers.³⁶

Fetal Mortality - Comparative Analysis

Missouri's fetal mortality rate in 1972 was 12.1 deaths per 1,000 live births. This rate has been reduced to 10.9 deaths per 1,000 live births by 1976. There has been evident progress in improving the health of mothers and unborn fetuses. However, there is significant variation within the state with the fetal mortality rate ranging from 8.9 in HSA IV to 13.5 in HSA I (Table 3.2-14). Overall, Missouri has made considerable progress in reducing the rate for fetal deaths.

TABLE 3.2-14.
FETAL MORTALITY PER 1,000 LIVE BIRTHS

	1976	1972
U.S.	10.5	12.7
Missouri	10.9	12.1
HSA I	13.5	13.7
HSA II	11.2	12.6
HSA III	10.2	11.8
HSA IV	8.9	10.5
HSA V	12.0	11.9

Source: 1978 Missouri State Health Plan, SHPDA (Jefferson City, 1978), p. 204, and Annual Report 1972.

Fetal Mortality - Problem Description

Reduction in fetal mortality and improvement in the health of mothers is evidenced by the improving rate of fetal deaths. However, the variation in fetal mortality rates statewide is consistent with the variation in infant mortality rates as indicated by the higher rates in HSA I, parts of HSA III, and HSA V. The importance of socio-economic status and race with fetal mortality is evidenced by the high fetal mortality rates in the predominantly poor and non-white inner cities of St. Louis and Kansas City and the rural poor in the Southeast Missouri Bootheel.

Fetal Mortality - Goals

GOAL: BY 1984, THE MISSOURI FETAL MORTALITY RATE SHOULD BE REDUCED FROM THE PRESENT RATE OF 10.9 TO 9.5 DEATHS PER 1,000 LIVE BIRTHS WITH NO HEALTH SERVICE AREA EXCEEDING 12.5 DEATHS PER 1,000 LIVE BIRTHS.

2. Morbidity

Childhood Diseases - Desired Status

Measles

Although measles is largely a childhood disease, infection at any age is possible. In Missouri, mass immunization began in 1966. Historically, measles reaches a peak incidence every 3 or 4 years. Immunization has altered that pattern, resulting in less frequent epidemics of much smaller proportions. Measles is a dangerous disease, sometimes leading to encephalitis, mental retardation, pneumonia, and eye damage. Normally, 6 per 1,000 identified cases of measles require hospitalization and 1 in 1,000 cases leads to encephalitis. Persons in the 1 through 5 age group are most at risk of such complications. Due to the seriousness of this disease, Missouri should ultimately decrease its incidence to a few isolated cases.

Rubella

Rubella is better known as German Measles. Normally, it is a relatively mild communicable disease; however, when it is acquired by a woman during the first four months of pregnancy, rubella can lead to infection of the fetus resulting in congenital abnormalities of the child. (Adults are more likely to contract German Measles than regular measles.) Vaccines for the rubella virus were first licensed in the U.S. in the summer of 1969.³⁷ In 1970, the State of Missouri launched a mass immunization program aimed at increasing the general level of immunity in the state in order to minimize exposure to pregnant women. For the protection of pregnant women, it is desired to lower the incidence of rubella to less than 10 isolated cases annually.

Mumps

This communicable disease is normally manifested as a localized swelling of one or more salivary glands, but it can affect other areas of the body such as the testes in the male. Severe mumps contracted by males can cause sterility. Complications are more often found where mumps have been acquired by teenagers and adults rather than by children. Presently, there is no mass immunization program for mumps in Missouri. It is estimated that 30 percent of children are immunized without record for mumps.³⁸ Both the U.S. Public Health Service and the American Academy of Pediatrics recommend vaccination for mumps among children one year of age and older who have not acquired it. Prepubertal males in particular should be vaccinated.

It is desired that the annual incidence of mumps should be reduced to less than 50 cases.

Other Diseases for Which Immunization is Mandated

Immunization must be provided for protection against diphtheria, tetanus, pertussis (whooping cough), and polio. The incidence of these diseases in Missouri should be maintained at as low a level as possible due to their severe manifestations.

Childhood Diseases - Comparative Analysis

Measles

In 1977, there was an epidemic of measles in Missouri when 1,058 cases were reported. Outbreaks occurred in 20 counties, including the metropolitan areas. By comparison, in 1975, there were only 251 cases.³⁹

Rubella

In 1970, the year immunization was begun, there were 571 cases of rubella.⁴⁰ In 1977, there were 93 cases of rubella in the state.

Mumps

In 1977, some epidemic outbreaks of mumps occurred in the metropolitan areas of Missouri and the rural areas of southeast Missouri. The total number of cases in the state in 1977 was 2,421. There were 1,027 cases in 1975, which is considered a more realistic number.⁴¹

Other Diseases for Which Immunization is Mandated

In 1977, there were 33 cases of pertussis, four cases of tetanus, one case of diphtheria, and no cases of polio.⁴²

Childhood Diseases - Problem Description

Section 3.4, Prevention and Detection Services, includes a discussion of immunization against childhood diseases.

Measles

The importance of an aggressive immunization program cannot be overestimated. In the years 1970 and 1971, due to federal cutbacks, fewer measles vaccinations were administered. There was, subsequently, a dramatic rise in the incidence of measles in Missouri from 23 cases in 1969 to 2,630 cases in 1971.⁴³

Rubella

Due to the devastating effect that this disease can have on fetal development (mental retardation, blindness, and hearing loss), incidence should be kept low and an aggressive immunization policy adhered to.

Mumps

Because of the dangerous side effects of this disease, Section 3.4 of this State Health Plan includes a recommended action that immunization against mumps be mandated by law. Presently, an estimate of the proportion of children who are immunized without record against mumps is 50 percent.

Other Diseases for Which Immunization is Mandated

The relatively low incidence of diphtheria, tetanus, and polio, with the possible exception of pertussis, has led to the relaxation of immunization efforts. However, due to the seriousness of these diseases, it is evident that protection through immunization must be mandated.

Childhood Diseases - Goals

GOAL: BY 1980, THE INCIDENCE OF MEASLES IN MISSOURI SHOULD NOT EXCEED 500 CASES PER YEAR.

GOAL: BY 1979, THE INCIDENCE OF RUBELLA IN MISSOURI SHOULD NOT EXCEED 50 CASES PER YEAR.

GOAL: BY 1984, THE INCIDENCE OF MUMPS IN MISSOURI SHOULD NOT EXCEED 750 CASES PER YEAR.

Dental Health - Desired Status

In order to ensure good dental health, dental prophylaxis for Missouri's youngsters is an important component of their overall health care. It is desired that children see a dentist at least annually for regular dental care.

Dental Health - Comparative Analysis

Table 4 in the appendix under Section 3.2 indicates that only 49 percent of Missourians under age 17 annually visited a dentist for regular dental care from 1974 through 1976. This figure is 5.4 percentage points less than the overall percentage in the North Central Region.

Dental Health - Problem Description

The low percentage of children receiving annual dental exams suggests that the dental health status of Missouri youngsters is less than optimal. Dental prophylaxis, in the form of an annual visit, is of key importance to the dental health of young people.

Dental Health - Goals

Due to data limitations, no goals will be presented at this time.

3. Socio-Emotional Disorders

Child Abuse and Neglect - Desired Status

The problem of child abuse is not limited to any socio-economic group; however, there are some general characteristics of the battered child syndrome. Usually, the child is rejected, and is the offspring of a parent who had also been rejected. Often there are too many children in the family, there is poor marital adjustment (sometimes the result of a forced marriage), and frequently the parent is in need of personal counseling. Socio-economic frustrations may also exist in the household.⁴⁴ Root causes of the problem require further study. However, based upon what is now known and the availability of programs such as the Division of Family Services Hotline, the occurrence of this syndrome must be reduced.

Child Abuse and Neglect - Comparative Analysis

The Division of Family Services received 17,489 reports of child abuse and neglect between January and December, 1977. The total number of children abused or neglected as reported were 34,219.⁴⁵ However, this problem is considered vastly underreported.

Child Abuse and Neglect - Problem Description

The term "abuse" can mean physical, sexual, or emotional abuse. The term "neglect" can mean educational, medical, or physical neglect. Certainly, socio-economic and parental education levels play a role in the incidence of abuse and neglect. Utilization of family planning and mental health services could impact greatly upon the prevalence of this problem (see Section 3.5, Maternal and Infant Health Services for a discussion of Family Planning). One important step in assisting parents and children in resolving these problems would be to train key persons such as doctors, teachers, social workers, and health officials to identify abuse and neglect and make referrals.

Child Abuse and Neglect - Goals

GOAL: By 1984, THE NUMBER OF ABUSED AND NEGLECTED CHILDREN SHOULD BE REDUCED BY A MINIMUM OF 10 PERCENT.

III. ADOLESCENT THROUGH MIDDLE LIFE HEALTH STATUS

1. Mortality

Major Cause of Death - Desired Status

Cancer, heart disease, cerebrovascular disease, and accidents are all responsible for unnecessary deaths. One method utilized to assess the impact of these unnecessary deaths is to estimate the amount of money that might have been earned by those dying prematurely. Using this approach, cardiovascular disease (both heart disease and cerebrovascular disease) accounts for 35 percent of the cost of mortality, with cancer responsible for 19 percent of the cost of mortality.⁴⁶ These figures were computed by the Department of HEW in "Papers on the National Health Guideline: Baselines for Setting Health Goals and Standards" and reflect national statistics. It is our long-range goal to minimize mortality as much as intervention will allow.

Major Cause of Death - Comparative Analysis

TABLE 3.2-15
DEATH RATES PER 100,000 POPULATION FOR:
HEART DISEASE, CEREBROVASCULAR DISEASE AND CANCER
BY AGE GROUPS: 35-44, 45-54, AND 55-64
FOR MISSOURI AND THE U.S. AND BY SEX FOR MISSOURI, 1977

	Heart Disease	Cerebrovascular Disease	Cancer
35-44 Missouri Males	71.0	9.2	34.5
35-44 Missouri Females	21.8	8.2	55.0
35-44 Missouri Total	45.6	8.7	54.8
35-44 U.S. Total	47.5	9.7	51.5
45-54 Missouri Males	305.6	37.5	201.4
45-54 Missouri Females	87.2	26.8	170.5
45-54 Missouri Total	191.9	31.9	185.3
45-54 U.S. Total	190.2	28.9	182.0
55-64 Missouri Males	793.8	104.9	522.4
55-64 Missouri Females	259.7	60.6	359.5
55-64 Missouri Total	505.7	81.0	434.5
55-64 U.S. Total	532.2	78.5	438.4

Source: Derived from: Missouri State Center for Health Statistics (Division of Health) and Vital Statistics Report: Annual Summary for the United States, 1977, (National Center for Health Statistics, DHEW Publication No. (PHS) 79-1120).

For heart disease, the middle-life age groups fare well when compared to U.S. rates. For cerebrovascular disease, in the 45-64 age groups, Missouri's rates are slightly higher. However, for cancer, the 35-54 age groups are higher while the 55-64 age group is lower. What is striking are the differences between male and female rates.

Major Cause of Death - Problem Description

There appears to be no major discrepancies between Missouri and U.S. death rates. Of most interest, concerning these statistics, are the differences between men and women. For heart disease, the male death rate is twice the female rate and for some age groups is more than three times as high. For cerebrovascular disease, the male rate is higher and the margin of difference increases with advancing age. For cancer, the death rate for women is higher than that for males for the age group 35-44, but for those aged 45-64 the rate for males leads by a substantial margin.

Major Causes of Death - Goal

GOAL: BY 1984, MORTALITY RATES DUE TO HEART DISEASE, CEREBROVASCULAR DISEASE, AND CANCER SHOULD BE REDUCED BY 5 PERCENT.

2. Morbidity

Venereal Disease - Desired Status

Venereal disease represents one of the major public health problems in Missouri today. Gonorrhea ranks as the most prevalent venereal disease and is one of the most common bacterial infections among adults in the U.S. Nationally, it has been estimated that nearly 25 percent of all cases of gonorrhea affect teenagers.⁴⁷ It is absolutely necessary to reduce the pool of infected persons in order to curtail the spread of venereal disease.

Venereal Disease - Comparative Analysis

TABLE 3.2-16
VENEREAL DISEASE CASES PER 100,000
1977

	Gonorrhea	Syphillis
Missouri Total	443.2	36.2
Kansas City	1300.4	86.3
St. Louis	1755.9	147.0
United States	465.9	30.0

Source: Center for Disease Control, Reported Morbidity and Mortality in the United States - Annual Summary, 1977, DHEW (Atlanta, Georgia, 1978) pp. 16-18.

In 1970, there were 310 cases of gonorrhea per 100,000 population in Missouri. This has increased significantly to 443.2 in 1977. The urban areas of Missouri show a tremendously greater rate, being nearly four times that of the total state.

The incidence of syphillis has decreased since 1970, however, the differences between the urban areas and the remainder of the state are significant.

Venereal Disease - Problem Description

Over the past seven years, the gonorrhea incidence rate has increased by approximately 40 percent. Because of the asymptomatic nature of gonorrhea in females, incidence among this sex may go undiagnosed and unreported and result in serious complications (e.g., sterility). Asymptomatic

females may also serve as reservoirs for further infection. The short incubation period of the disease results in rapid spread and contributes to the rise in incidence. Further compounding the problem of control is the fact that new strains of gonorrhea are more drug resistant, hampering treatment and control.⁴⁸

Although syphilis is a communicable disease, it is rarely transmitted after a period of two years. However, in its later states, it is a serious threat to the health of the carrier. Control of syphilis is a task that requires tracing and treating cases of two years or less in duration. There is an average 21 day incubation period for syphilis. Through proper investigation of contacts within this 21-day period, much can be done to curtail the transmission of syphilis.⁴⁹ Missouri has seen a decline in the incidence of syphilis, due in large part to the success of control programs.

General strategies for further improvement include health and sex education, premarital and prenatal periodic examinations, provision of adequate facilities for early diagnosis and treatment and the continuance of case-finding activities by the Missouri Division of Health and local health departments. Particular focus should be given to the metropolitan areas, where the rates are extremely high.

Venereal Disease - Goals

GOAL: BY 1984, THE STATEWIDE INCIDENCE RATE FOR GONORRHEA SHOULD NOT EXCEED THE PRESENT RATE OF 443.2 CASES PER 100,000 POPULATION.

GOAL: BY 1984, THE STATEWIDE INCIDENCE RATE FOR SYPHILLIS SHOULD NOT EXCEED THE PRESENT U.S. RATE OF 30.0.

Limitation in Activity Due to Chronic Conditions - Desired Status

In middle life, many persons become limited in activity due to chronic conditions, even though prevention efforts might have postponed or eliminated the debilitating effects. It is known, however, that physical limitations can be reduced by prevention efforts aimed at young people, today. Emphasis should also be placed on therapy for those persons presently faced with limitations who could be brought to their optimum functioning level.

Limitation in Activity Due to Chronic Conditions - Comparative Analysis

In Missouri, among those 45-64 years of age, there is a slightly greater percentage of people limited in activity compared to the U.S. or the North Central Region as Table 5 in the appendix under Section 3.2 illustrates. Five percent of the 45-64 age group in Missouri are

limited in activity. These limitations are a result of chronic conditions such as: cardiovascular disease and arthritis. Twenty-five percent of this population group are limited in activity.

Limitation in Activity Due to Chronic Conditions - Problem
Description

Fortunately, Missouri does not have a significant percentage of persons who are unable to carry on major activities. However, Missouri does have a high percentage of persons who are limited in the amount or kind of major activity. For those persons in the 45-64 age group, who are members of the working population, reaching an optimum functional level is of significant economic importance.

3. Accidental Death and Injury and Violent Death

Accidental Deaths - Desired Status

For certain age groups, accidents represent the leading cause of death. Youthful males, for example, are more at risk of death from a motor vehicle accident than the general population. It is desired to substantially reduce these untimely and usually preventable accidental deaths.

Accidental Deaths - Comparative Analysis

TABLE 3.2-17
DEATH RATES PER 100,000 POPULATION FOR MOTOR VEHICLE ACCIDENTS
BY AGE GROUP 15-24 FOR MISSOURI AND THE U.S. AND BY SEX FOR MISSOURI
AND TOTAL ACCIDENT DEATH RATES BY AGE GROUP, 1977

	Motor Vehicle Accident Deaths	Total Accident Death
15-24 Missouri Males	69.6	97.5
15-24 Missouri Females	22.9	26.7
15-24 Missouri Total	46.5	62.6
15-24 U.S. Total	44.6	64.7

Source: Derived from: Missouri State Center for Health Statistics (Division of Health) and Vital Statistic Report: Annual Summary for the United States, 1977 (National Center for Health Statistics DHEW Publication No. (PHS) 79-1120).

TABLE 3.2-18
DEATH RATES PER 100,000 POPULATION FOR TOTAL ACCIDENTS
BY AGE GROUPS: 24-35, 35-44, 45-54 AND 55-64
FOR MISSOURI AND THE U.S. AND BY SEX FOR MISSOURI, 1977

	Accident Deaths
24-35 Missouri Males	74.4
24-35 Missouri Females	16.2
24-35 Missouri Total	44.4
24-35 U.S. Total	45.9
35-44 Missouri Males	51.3
35-44 Missouri Females	13.5
35-44 Missouri Total	32.6
35-44 U.S. Total	36.6

TABLE 3.2-18
(CONTINUED)

	Accident Deaths
45-54 Missouri Males	70.0
45-54 Missouri Females	19.5
45-54 Missouri Total	43.7
45-54 U.S. Total	41.1
55-64 Missouri Males	69.1
55-64 Missouri Females	22.8
55-64 Missouri Total	44.1
55-64 U.S. Total	46.3

Source: Derived from: Missouri State Center for Health Statistics (Division of Health) and Vital Statistic Report: Annual Summary for the United States, 1977 (National Center for Health Statistics DHEW Publication No. (PHS) 79-1120).

As the table depicts, motor vehicle accident death rates and total accident death rates for both sexes is highest among 15-24 year olds. Overall, Missouri compares favorably with U.S. figures.

Accidental Death and Injury and Violent Death - Problem Description

Due to the particularly untimely and preventable nature of the deaths that these statistics indicate, they are of particular importance. Noteworthy are the consistently high male mortality rates, with the greatest difference being in the age range of 24-35. Prevention strategies aimed towards reducing automobile fatalities are of particular importance. Of those strategies, emphasis should be placed on the driver who is impaired due to substance use.

Accidental Death and Injury and Violent Death - Goals

GOAL: BY 1984, THE MORTALITY RATE DUE TO ACCIDENTAL DEATH FOR MALES 15-24 SHOULD BE REDUCED BY 10 PERCENT.

GOAL: BY 1984, THE MISSOURI ACCIDENT DEATH RATE FOR THE AGE GROUP ADOLESCENCE THROUGH MIDDLE LIFE SHOULD BE REDUCED BY 5 PERCENT WITH PARTICULAR EMPHASIS ON THE REDUCTION OF RATES FOR MALES.

Suicide - Desired Status

As mentioned earlier in the general discussion of suicide, correlations have been found between certain socio-demographic characteristics and the occurrence of suicide. Through interventions directed to these characteristics, eventual reduction may be achieved.

Suicide - Comparative Analysis

TABLE 3.2-19
MORTALITY RATE PER 100,000 POPULATION FOR:
SUICIDE AND HOMICIDE BY AGE GROUPS:
15-24, 25-34, 35-44, 45-54, AND 55-64
AND BY SEX FOR MISSOURI AND THE U.S.
1977 (U.S. DATA BY SEX, 1976)

	Suicide		Homicide	
	Missouri	U.S.	Missouri	U.S.
15-24 Male	19.8	18.5 (1976)	24.6	19.1 (1976)
15-24 Female	3.8	4.8 (1976)	9.6	5.6 (1976)
15-24 Total	11.9	13.1	17.2	13.1
25-34 Male	26.7	23.6 (1976)	24.7	27.0 (1976)
25-34 Female	9.3	8.4 (1976)	6.0	6.2 (1976)
25-34 Total	17.7	17.8	15.0	17.1
35-44 Male	22.4	22.8 (1976)	23.6	23.8 (1976)
35-44 Female	12.0	10.2 (1976)	5.2	5.3 (1976)
35-44 Total	17.0	16.5	14.1	16.0
45-54 Male	25.0	26.2 (1976)	13.7	16.5 (1976)
45-54 Female	14.9	12.7 (1976)	4.9	4.0 (1976)
45-54 Total	19.7	19.1	9.1	10.7
55-64 Male	34.3	24.8 (1976)	11.4	12.0 (1976)
55-64 Female	9.3	11.1 (1976)	4.0	3.1 (1976)
55-64 Total	20.8	18.4	7.4	8.2

Source: Derived from: Missouri State Center for Health Statistics (Division of Health) and Vital Statistics Report: Annual Summary for the United States, 1977 (National Center for Health Statistics DHEW Publication No. (PHS) 79-1120 and Facts of Life and Death (National Center for Health Statistics DHEW Publication No. (PHS) 79-1222.

Table 3.2-19 indicates that Missouri's suicide rates closely correlate with U.S. figures except for the 55-64 age group which is higher for Missouri. Noteworthy is the fact that mortality rates for males are consistently higher than rates for females.

Suicide - Problem Description

Mortality rates due to suicide are lowest among the 15-24 year olds and highest among the 55-64 year olds. Among women, the peak rate is in the age group 45-54 while for men it is 55-64. Also noteworthy are the age groups where the male rate is several times the female rate. In the 15-24 year old group, the male rate approaches 4 times the rate for females.

Suicide - Goals

GOAL: BY 1984, THE MISSOURI SUICIDE DEATH RATE FOR THE AGE GROUP ADOLESCENCE THROUGH MIDDLE LIFE SHOULD BE REDUCED BY 5 PERCENT WITH PARTICULAR EMPHASIS ON THE REDUCTION OF RATES FOR MALES.

Homicide - Desired Status

Among young males, the death rate for homicide exceeds the rate for the general population. This is a target group for which homicides must be drastically reduced.

Homicide - Comparative Analysis

Table 3.2-19 illustrates homicide rates. It is noteworthy that for the youngest age group, 15-24, the Missouri rate exceeds the U.S. rate. For the older groups, the U.S. rate tends to be slightly higher.

Homicide - Problem Description

This data supports the common belief that homicides occur more often among young men. In Missouri, the rate among the 15-24 year olds is particularly excessive.

Homicide - Goals

GOAL: BY 1984, THE HOMICIDE DEATH RATE SHOULD BE REDUCED OVER ALL AGE GROUPS WITH PARTICULAR EMPHASIS ON REDUCTION OF THE DEATH RATE AMONG THOSE 15-24 YEARS.

4. Socio-Emotional Disorders

Alcoholism - Desired Status

As mentioned earlier, Missouri ranks eighth in the nation in regard to the incidence of alcoholism. There is a very strong link between alcoholism and cirrhosis of the liver. Comparing Missouri's death rate for cirrhosis of the liver in middle life to that of the nation can be a surrogate indicator of the severity of the problem of alcoholism in Missouri. It is thought to be feasible to reduce the death rate by one-third.

Alcoholism - Comparative Analysis

TABLE 3.2-20
MORTALITY RATES PER 100,000 POPULATION FOR CIRRHOSIS OF THE LIVER
BY AGE GROUPS: 35-44, 45-54, AND 55-64 FOR MISSOURI
AND THE U.S. AND BY SEX FOR MISSOURI, 1977

	Cirrhosis of the Liver
35-44 Missouri Males	17.6
35-44 Missouri Females	5.6
35-44 Missouri Total	<u>11.4</u>
35-44 U.S. Total	15.6
45-54 Missouri Males	42.1
45-54 Missouri Females	22.2
45-54 Missouri Total	<u>31.7</u>
45-54 U.S. Total	33.6
55-64 Missouri Males	52.4
55-64 Missouri Females	14.6
55-64 Missouri Total	<u>32.0</u>
55-64 U.S. Total	46.8

Source: Derived from: Missouri State Center for Health Statistics (Division of Health) and Vital Statistic Report: Annual Summary for the United States, 1977 (National Center for Health Statistics, DHEW Publication No. (PHS) 79-1120).

Although data compiled in 1970 indicates that Missouri ranked 8th in the nation for alcoholism, mortality rates in 1977 for cirrhosis of the liver are clearly less than U.S. figures. This does not necessarily refute the ranking. However, the validity of the analysis could be questioned.

Alcoholism - Problem Description

Even though mortality due to liver damage does not exceed U.S. rates, it warrants intervention because of the preventable nature of the illness.

Alcoholism - Goals

GOAL: BY 1984, THE DEATH RATE DUE TO CIRRHOSIS OF THE LIVER SHOULD BE REDUCED BY A MINIMUM OF 5 PERCENT WITHIN EACH AGE GROUP IN MIDDLE LIFE.

IV. HEALTH STATUS OF THE AGED

1. Mortality

Major Causes of Death - Desired Status

Nearly thirteen percent of Missouri's population is now 65 and over. The development of modern sanitation and water systems, safer food, plus improved medical intervention have reduced the morbidity and mortality resulting from infectious diseases and have extended the average life expectancy at birth. The increase in numbers of people reaching old age has led to a higher prevalence of chronic diseases.⁵⁰ For cardiovascular disease and cancer the single most important predisposing factor is old age. Nevertheless, interventions can be made to extend life as long and as disability-free as is medically feasible. Improving health status, by promoting independence, productivity, and longevity in older Missourians should be a very important goal of the health care system. Mortality among the 65+ population should compare favorably to U.S. mortality rates for this age group. Largely preventable deaths including pneumonia/influenza and accidents should be reduced to the minimums.

Major Cause of Death - Comparative Analysis

TABLE 3.2-21
MORTALITY RATES PER 100,000 POPULATION FOR HEART DISEASE,
CEREBROVASCULAR DISEASE, CANCER, AND PNEUMONIA/INFLUENZA
BY AGE GROUPS 65-74, 75-84, AND 85+
FOR MISSOURI AND THE U.S.,
AND BY SEX FOR MISSOURI
1977

	Heart Disease	Cerebrovascular Disease	Cancer	Pneumonia/ Influenza
65-74 Missouri Males	1899.3	364.2	1116.2	96.2
65-74 Missouri Females	855.8	258.1	563.6	44.0
65-74 Missouri Total	1298.7	303.1	798.2	66.1
65-74 U.S. Total	1255.6	260.6	794.5	60.4
75-84 Missouri Males	3878.2	1053.9	1744.1	323.6
75-84 Missouri Females	2511.4	942.8	824.3	170.7
75-84 Missouri Total	3019.0	984.0	1165.8	227.5
75-84 U.S. Total	3201.9	987.1	1270.8	233.9
85+ Missouri Males	8508.3	2770.9	2150.8	910.6
85+ Missouri Females	7359.4	2662.1	1227.0	635.1
85+ Missouri Total	7734.0	2648.4	1528.2	724.9
85+ U.S. Total	7034.6	2428.1	1488.2	695.0

Source: Derived from: Missouri State Center for Health Statistics (Division of Health) and Vital Statistic Report: Annual Summary for the United States, 1977 (National Center for Health Statistics, DHEW Publication No. (PHS) 79-1120).

The figures in Table 3.2-21 are interesting when compared to U.S. figures. Death rates for all the causes of death except accidental death (discussed separately) are consistently higher for Missouri in the 65-74 age group and the 85+ age group, whereas for the 75-84 age group, Missouri's death rates are consistently lower for all the causes. One might question whether there is an error in the population projection of the number of Missourians in the 75-84 year old group. However, an examination of overall death rates since 1975, shows that these trends have been consistent. For presently unknown reasons, the 75-84 year old cohort appears to be exceptional.

Major Cause of Death - Problem Description

Of particular concern is the mortality rate for pneumonia/influenza, which is substantially higher for Missourians in the 65-74 and the 85+ age groups. Some of these deaths are subject to prevention from immunization and some deaths might have been averted through diagnosis and treatment. Among the 85+ age group, Missouri's mortality rate for heart disease and cerebrovascular disease is higher than the national figure.

Major Cause of Death - Goals

GOAL: BY 1984, AGE SPECIFIC DEATH RATES FOR THOSE PERSONS 65 AND OVER SHOULD NOT EXCEED THE U.S. RATE FOR THE SAME AGE GROUP.

2. Morbidity

Limitation of Activity Due to Chronic Condition - Desired Status

This indicator has been examined previously for the population as a whole and for persons aged 45-64. In each case, Missouri was found to have more persons limited in activity than the U.S. or the North Central Region. While one could say that the greater proportion of persons in the 45-64 age group skewed the figure for our total population, the age-specific examination also revealed higher levels in Missouri. Rehabilitation and medical care should be available for those persons currently limited in activity. Prevention programs are also important in order to offset the unnecessary limitations often-times associated with the aging process.

Limitation of Activity Due to Chronic Conditions - Comparative Analysis

Table 6 in the appendix under Section 3.2 illustrates some estimates of the degrees of limitation among those 65 and over for the U.S., the North Central Region, and Missouri. Missouri has a greater percentage of this age group (47 percent) who are limited in activity.

Limitation of Activity Due to Chronic Conditions - Problem Description

The fact that 47 percent of Missouri's population age 65 and over is limited in activity due to a chronic condition, that 25 percent are limited in amount or kind of activity, and that 16 percent are unable to carry on major activity, speaks to a significant health status problem among our aged population. This data demonstrates the need for easily accessible health services, nutrition services, and community support services.

Limitation of Activity Due to Chronic Conditions - Goals

Due to data limitations, no goals will be presented at this time.

Dental Health - Desired Status

Poor dental health among the aged can lead to nutritional and gastro-intestinal problems as a result of an inability to chew properly. Minimally, Missouri should promote good dental health among the aged as a preventive measure.

Dental Health - Comparative Analysis

Table 7 in the appendix under Section 3.2 illustrates that in Missouri only 25 percent of our elderly population visited a dentist in the last year. This is 3-4 percent lower than the U.S. estimate or the North Central Region's estimate.

Dental Health - Problem Description

The estimate that only 25 percent of the aged had an annual visit indicates a general lack of good dental health practices among the aged as a population group. Because poor dental health can be responsible for other health problems, increased prophylaxis should take place.

Dental Health - Goals

Due to data limitations, no goals will be presented at this time.

3. Accidents and Injuries and Violent Death

Accidental Death - Desired Status

The aged are at higher risk for accidents, due to muscular-skeletal and sensory impairments. It is not reasonable to expect that accidental death rates among this group should be the same as the rates for the remainder of the population. However, it is desired, by means of prevention strategies, that the accidental death rate among the aged be no more than the overall Missouri rate for accidents, (other than those related to motor vehicle accidents). Furthermore, the number of accidents among older males should be reduced to a level comparable to the number of accidents among females and both be reduced through educational and prevention strategies.

Accidental Death - Comparative Analysis

TABLE 3.2-22
MORTALITY RATES PER 100,000 POPULATION DUE TO ACCIDENTS
BY AGE GROUPS 65-74, 75-84, AND 85+
FOR MISSOURI AND THE U.S. AND BY SEX FOR MISSOURI
1977

	Accident Deaths
65-74 Missouri Males	91.5
65-74 Missouri Females	46.4
65-74 Missouri Total	65.6
65-74 U.S. Total	60.8
75-84 Missouri Males	167.3
75-84 Missouri Females	114.3
75-84 Missouri Total	134.0
75-84 U.S. Total	131.2
85+ Missouri Males	346.3
85+ Missouri Females	316.2
85+ Missouri Total	326.0
85+ U.S. Total	277.5

Source: Derived from: Missouri State Center for Health Statistics, (Division of Health) and Vital Statistic Report: Annual Summary for the United States, 1977 (National Center for Health Statistics DHEW Publication No. (PHS) 79-1120).

Missouri's mortality rates due to accidents are consistently higher for each age group when compared to the U.S.

Accidental Death - Problem Description

There are a number of reasons why age-specific mortality rates are higher for Missouri's aged. The relationship between and among our aged farmers, unsafe housing, travel on rural roads, and (as reported earlier) a greater percentage of aged Missourians who are limited in activity due to chronic conditions illustrates the complexity of cause/effect.

Accidental Death - Goals

GOAL: BY 1984, AGE-SPECIFIC ACCIDENTAL DEATH RATES AMONG THOSE PERSONS AGE 65 AND OVER SHOULD NOT EXCEED THE COMPARABLE U.S. RATES.

Suicide - Desired Status

The aged should be considered a high risk group, relative to the incidence of depression and suicides. Prevention and psychiatric services are considered important interventions for the reduction of this high risk.

Suicide - Comparative Analysis

TABLE 3.2-23
MORTALITY RATES PER 100,000 POPULATION FOR SUICIDE BY AGE GROUPS
65-74, 75-84, AND 85+ FOR MISSOURI AND THE U.S.
AND BY SEX FOR MISSOURI, 1977

	Suicide
65-74 Missouri Males	26.6
65-74 Missouri Females	7.6
65-74 Missouri Total	<u>21.6</u>
65-74 U.S. Total	20.5
75-84 Missouri Males	35.9
75-84 Missouri Females	2.4
75-84 Missouri Total	<u>14.8</u>
75-84 U.S. Total	22.3
85+ Missouri Males	39.1
85+ Missouri Females	2.7
85+ Missouri Total	<u>14.5</u>
85+ U.S. Total	17.3

TABLE 3.2-23

Source: Derived from: Missouri State Center for Health Statistics (Division of Health) and Vital Statistics Report: Annual Summary for the United States, 1977 (National Center for Health Statistics, DHEW Publication No. (PHS) 79-1120).

When suicide among Missouri's aged is compared with U.S. figures for the same age groups, it is revealed that for the 65-74 year old group, Missouri is only slightly higher and for the other age groups Missouri's rate is considerably lower.

Suicide - Problem Description

The Missouri suicide rate increases throughout adolescent and middle life and peaks for the age groups 55-74. This indicates a high risk group to which prevention strategies should be directed. The rates for males are considerably higher than for females and the peak age groups suggests a correlation with retirement.

Suicide - Goals

GOAL: BY 1984, SUICIDE RATES AMONG MALES AGED 55-74. SHOULD BE REDUCED BY AT LEAST 5 PERCENT.

4. Socio-Emotional Disorders

Alcoholism - Desired Status

The link between alcoholism and death from cirrhosis of the liver is not precisely known; however, alcohol has a toxic effect upon the liver and with advancing age, many alcoholics develop the disease.

Alcoholism - Comparative Analysis

TABLE 3.2-24
MORTALITY RATES PER 100,000 POPULATION FOR CIRRHOSIS OF THE LIVER
BY AGE GROUPS 65-74, 75-84, AND 85+ FOR MISSOURI AND THE U.S.
AND BY SEX FOR MISSOURI, 1977

	Cirrhosis of Liver
65-74 Missouri Males	48.0
65-74 Missouri Females	21.5
65-74 Missouri Total	32.8
65-74 U.S. Total	42.4
75-84 Missouri Males	45.6
75-84 Missouri Females	19.6
75-84 Missouri Total	29.2
75-84 U.S. Total	30.7
85+ Missouri Males	11.1
85+ Missouri Females	13.5
85+ Missouri Total	12.7
85+ U.S. Total	14.9

Source: Derived from: Missouri State Center for Health Statistics (Division of Health) and Vital Statistic Report: Annual Summary for the United States, 1977 (National Center for Health Statistics, DHEW Publication No. (PHS) 79-1120).

Among the 65-74 year olds, Missouri's mortality rate for cirrhosis of the liver is considerably lower than it is for the U.S. For the older age cohorts, Missouri's rate more closely approximates U.S. figures.

Alcoholism - Problem Description

Among the older age groups, strategies for reduction of the alcohol related death rate have a more limited impact. For the greatest overall impact, alcoholism should be prevented and/or treated in adolescent and middle life years. However, efforts to reach and treat the aged alcoholic should not be de-emphasized.

Because many older persons are more likely to utilize medication than others in the population, education targeted to this group related to the dangers of mixing medications and alcohol should be emphasized. The magnitude of the problem is not reflected in the cirrhosis of the liver statistics but is believed to be of some significance.

Alcoholism - Goals

GOAL: BY 1984, MORTALITY DUE TO CIRRHOSIS OF THE LIVER AMONG THOSE AGED 65 AND OVER SHOULD NOT EXCEED THE PRESENT RATES BY AGE COHORTS (SEE TABLE 3.2-24).

ENDNOTES

¹National Council for Homemaker-Home Health Aide Service, Inc. "Basic Need Survey Methods," A paper presented by research consultant Dr. Eugene Shinn, December 1978.

²Joel Kleinman, "Mortality" Statistical Notes for Health, (National Center for Health Statistics, February 1977), p. 3.

³Health Resources Administration, Health - United States - 1976-1977, DHEW Publication No. (HRA) 77-1232 (Hyattsville, Md., 1977) p. 67.

⁴Health Resources Administration, op.cit., p. 67.

⁵Peter Peacock, "Health Maintenance: A Strategy for Preventing Cancer and Heart Disease," Bulletin of the New York Academy of Medicine, I, (January 1975), p. 97.

⁶David Levin, Susan Devesa, David J. Goodwin, Debra T. Silverman, Cancer Rates and Risks, 2nd Edition prepared for the U.S. Department of HEW, (1974) p. 58.

⁷Ibid., p. 66.

⁸Irving Wright, "Problems Which Inhibit the Prevention of Cardiovascular Disease," Bulletin of the New York Academy of Medicine, I, (January 1975), p. 115.

⁹Ibid., p. 117.

¹⁰Bureau of the Census, Statistical Abstract of the U.S. - 1977 (U.S. Department of the Census, 1977), p. 67.

¹¹Mid-America Health Systems Agency, Draft Health Systems Plan - 1979 (Kansas City, Missouri, 1978), p. 1 - Chronic Disease.

¹²National Center for Health Statistics, State Estimates of Disability and Utilization of Medical Services: United States, 1974-1976, DHEW Publication No. (PHS) 78-1241, p. 76.

¹³Franklin Top and Paul Wehrle, Communicable and Infectious Disease, (C. V. Mosby, 1972), p. 697.

¹⁴Missouri Division of Health, unpublished data, (Jefferson City, 1977).

¹⁵Area V Health Systems Agency, Health Systems Plan - 1978, (Poplar Bluff, Missouri, 1978), p. 85.

- ¹⁶Health Resources Administration, op.cit., p. 67.
- ¹⁷Area II Health Systems Agency, Health Systems Plan - 1978, (Moberly, Missouri, 1978), p. 415.
- ¹⁸Bureau of the Census, op.cit., p. 174.
- ¹⁹James Weiss, "Suicide" in a reprint from the American Handbook of Psychiatry - Adult Clinical Psychiatry, 2nd Edition (Basic Books, 1972), p. 756.
- ²⁰John Hanlon, Public Health - Administration and Practice, (C. V. Mosby Co., 1974), p. 499.
- ²¹Mid-America Health Systems Agency, op.cit., p. 1, Non-Disease Deaths.
- ²²Metropolitan Health Planning Corporation, Health Systems Plan, (Cleveland, Ohio, 1977), p. 26.
- ²³John Hanlon, op.cit., p. 502-503.
- ²⁴John Hanlon, op.cit., p. 497.
- ²⁵Missouri Department of Mental Health, Missouri State Plan on Alcohol and Drug Abuse - FY 1979 (Jefferson City, Missouri, 1978) p. 165.
- ²⁶Metropolitan Health Planning Corporation, op.cit., p. 26.
- ²⁷Missouri Department of Mental Health, Missouri State Plan for Developmental Disabilities Services and Facilities Construction Program for FY 1978 (Jefferson City, Missouri, 1978), p. 94.
- ²⁸Ibid., p. 70.
- ²⁹Joint Panel for the Prevention of Fetal Alcohol Syndrome "Report to the Wisconsin Council on Alcoholism and Other Drug Abuse and Wisconsin Council on Developmental Disabilities," University of Wisconsin, October, 1977.
- ³⁰National Health Education Committee, Inc., Facts on the Major Killers and Crippling Diseases in the U.S. Today, (New York, 1971), p. 3-4.
- ³¹Missouri Department of Mental Health, State Plan for Comprehensive Mental Health Services for FY 1978-1979, (Jefferson City, Missouri, 1978), p. 3-1, 3-2.
- ³²Ibid., p. 3-7.

³³Greater St. Louis Health Systems Agency, Health Systems Plan - 1978, (St. Louis, 1978), p. IV MC-10.

³⁴Area II Health Systems Agency, op.cit., p. 4-3.

³⁵Greater St. Louis Health Systems Agency, op.cit., IV MC-17.

³⁶Area V Health Systems Agency, op.cit., p. 87.

³⁷Franklin Top, op.cit., p. 562.

³⁸Franklin Top, op.cit., p. 433.

³⁹Division of Health, unpublished data, (Jefferson City, Missouri, 1978).

⁴⁰Ibid.

⁴¹Ibid.

⁴²Ibid.

⁴³Ibid.

⁴⁴John Hanlon, op.cit., p. 504.

⁴⁵Division of Family Services, unpublished data, (Jefferson City, Missouri, 1978).

⁴⁶Area II Health Systems Agency, op.cit., p. 90.

⁴⁷Franklin Top, op.cit., p. 267.

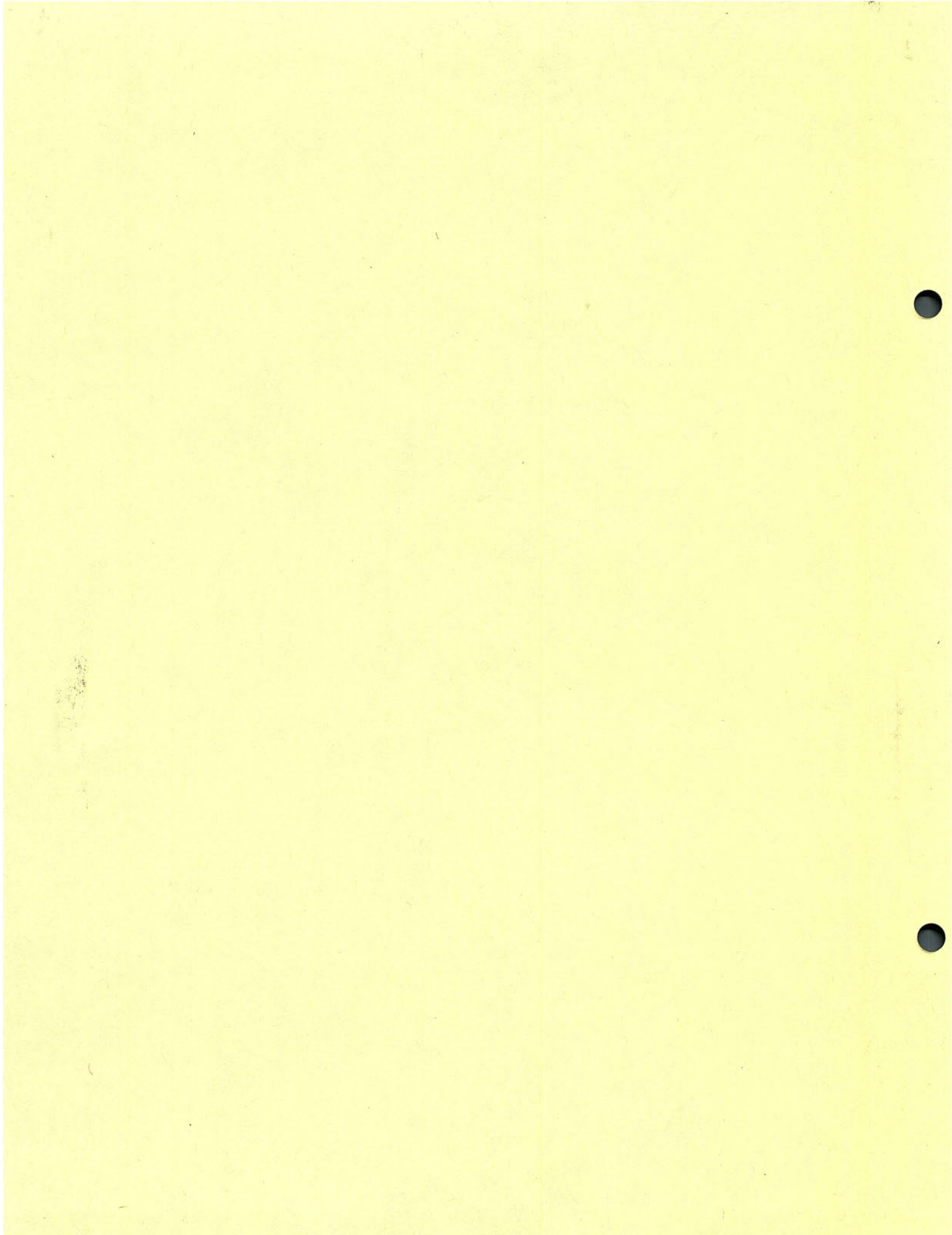
⁴⁸Franklin Top, op.cit., p. 269.

⁴⁹Franklin Top, op.cit., p. 649.

⁵⁰Mid-America Health Systems Agency, op.cit., p. 1 - Chronic Diseases.

SECTION 3.3
PROMOTION AND PROTECTION SERVICES

INTRODUCTION
HEALTH EDUCATION
ENVIRONMENTAL HEALTH



INTRODUCTION

In the process of determining the major problems in Missouri for which planned solutions are required and for which intervention strategies can be implemented through the State Health Plan, health promotion and protection surfaced in all five parts of the analysis.* While there are many definitions of health promotion activities, a theme common to all is that health promotion activities should motivate the adoption of a personal life style which minimizes risks of avoidable disease, disability, and premature mortality, and assist individuals to make informed, appropriate use of the health care system.

The utilization of health promotion activities to modify behavior is thought to be justified on the grounds that "good" health requires individual knowledge, individual responsibility, and individual participation in making rational, informed choices about life style. To provide information about illness and disease prevention is not sufficient; people must be given proper incentives (financial and opportunity) for translating this knowledge into practice. The ultimate objective of health promotion activities must be favorable alteration in the manner in which individuals, communities, and institutions act with respect to health-related activities.

It is becoming increasingly clear that the overall health status of the population is determined not only by the availability of medical services but also by the environment (physical, recreational, home, work), genetics, and by the life styles of the population. Given past accomplishments and types of chronic diseases prevalent in society today, it is apparent that the best hope of achieving any significant increase in life expectancy of the population (outside of a major breakthrough in the area of cancer research) is through the prevention of illness and accidents. It is unrealistic to expect the health care system to overcome the effects of years of health-damaging activities; the modification of life style to include sound health behavior will have greater impact on health status than will the provision of more sophisticated medical technology.¹ Efforts to overcome inequities in the distribution of medical services within the current health care system and medical research must be continued; however, in the long run the greatest benefits will likely accrue from successful efforts in maintaining the viability of our environment and changing the life styles of the population.²

Historically, health has been the responsibility of the individual. However, as better knowledge of the human body, disease mechanisms, and medical practice was acquired, people became more and more dependent upon medical intervention. Concomitantly, decreasing emphasis was placed on individual behavior and individual responsibility. Despite the vast

*Refer to the State Health Plan Working Paper, "Step 2: Identify Problem Areas," for a detailed explanation of the identification process.

increase in health care expenditures during the last 15 years and the improved accessibility to medical care for most Americans, health status as measured by the life expectancy of the 45 year old male has increased only about four years since 1900.³ As a result, the concept of individual responsibility in the area of health is gaining reacceptance. Analyses of the principal causes of morbidity and mortality have revealed that "environmental factors and life style contributed so greatly as to constitute the key to effective control."⁴ Recent studies⁵ show that specific aspects of life style, such as diet, physical activity, tobacco smoking (especially cigarettes), stress, and consumption of alcohol have important influences on morbidity and mortality. To the extent that these behaviors can be modified, the prevalence of the current leading causes of death can be reduced, or at least their onset and consequences delayed. The modification of life style can enable an individual to reduce the costs of his/her health care, thereby reducing the overall expenditures on health care in the United States.

In order for the individual to assume responsibility and accountability for his/her own health, he/she must be provided with the necessary tools to enable him/her to make intelligent, rational decisions concerning healthful behavior. Resources, opportunities, and incentives must lead to appropriate modifications in life style and behavior. A major difficulty encountered by health care professionals in attempting to improve the health of the population through behavior modification is that intervention strategies are not within the realm of traditional medicine; traditional medicine needs to be supplemented in assisting individuals to assume more responsibility for health.

Another important goal of health promotion activities is to reduce demand upon the health care delivery system by preventing illness. Such a reduction in demand may act as a deterrent to the rise in health care costs. A reduction in demand may also occur because of improved utilization of the system by informed consumers, e.g., less expensive means may be substituted for more expensive measures.

From the information in the analysis of identified needs in Missouri conducted for the first plan, it was determined that special emphasis should be placed on improving the life style information relative to immunization, gonorrhea, heart disease, stroke, accidents, suicides, homicides, and specific types of cancer.

While specific morbidity and/or mortality indicators will be developed for these identified problems, a basic premise of the health promotion section is that greater attention must be focused on preventing or modifying the underlying causes of disease rather than on the diseases themselves. While we may not be able to measure directly the impact of an intervention strategy on an underlying cause, it is reasonable to presume that any reduction in morbidity and/or mortality which follows the implementation of such a strategy is, at least in part, attributable to that strategy. It must be recognized, however, that the results of many of the intervention strategies cannot be measured in the short run. For example, school health programs to encourage young children to alter their life style in order to reduce the risk of heart disease cannot be evaluated until these youngsters reach adulthood.

The overall goal proposed in this component is to improve the health status of the population by reducing premature mortality and/or morbidity due to preventable causes through the modification of life style, increased individual responsibility, improvement in the physical and natural environment, and proper utilization of the health care system.

I. HEALTH EDUCATION

Over forty percent of all deaths in Missouri occur before the age of seventy with the majority of them due, at least technically, to preventable causes. (See Health Status, Section 3.2). Education could be directed toward reducing these premature deaths.

Most of the chronic diseases prevalent in society today are not susceptible to single factor control; that is, many of the underlying causes are not medical, but rather major social, economical, cultural, and psychological phenomena that have profound health status implications. "A distinctive feature of these conditions is that most of them are caused by factors (e.g., the environment and individual behavior) that are not susceptible to direct medical solution."⁶ Attention must focus on heightening people's awareness of the underlying causes of disease and for generating individual and community responsibility for curtailing these causes.

Premature deaths due to cardiovascular disease and cancer are related to the abusive habits of individuals. "Heart disease and stroke are related to dietary factors, cigarette smoking, potentially treatable but undetected hypertension, lack of exercise. Cancer is related to smoking and most likely to diets rich in fat and refined foodstuffs and low in residue and to the ingestion of food additives and certain drugs, or the inhalation of a wide variety of noxious agents. Certain occupational exposures and personal hygiene factors account for a small but important fraction of the total deaths due to cancer. Theoretically, all deaths due to accidents, homicides, and suicides are preventable."⁷

Over the age of 35, heart disease first appears as a significant cause of death and the incidence of cancer begins to increase (see Health Status, Section 3.2). While the causes of circulatory diseases are various, there seems to be little doubt that obesity, smoking, stress, lack of exercise, and high-fat diets are all important factors, particularly in combination. All of these self-imposed risks are, theoretically, amenable to modification. Although the actual responsibility for changing life style rests with the individual, community involvement is essential during all phases of an individual's acceptance of this responsibility.

Although it is true that the medical care system may only treat victims after an accident has occurred, or in many cases, after symptoms of a disease become manifest, health promotion and education activities can have an impact on reoccurrence or on prevention of the original act. Research has shown that life style practices contribute significantly to the deterioration in the health status of the population. Studies by Breslow and Belloc⁸ have shown that life expectancy and health are significantly related to such basic health habits as: a) having regular adequate sleep (7 to 8 hours), b) eating three meals a day at regular times, c) not snacking between meals, d) maintaining weight at normal levels, e) moderate physical exercises, f) if at all, drinking alcohol in moderation, and g) not smoking.

* = Will not be addressed at this time.

Consumer health education has been defined to include six activities:

- "1. Inform people about health, illness, disability, and ways in which they can improve and protect their own health, including more efficient use of the delivery system;
2. Motivate people to want to change to more healthful practices;
3. Help them to learn the necessary skills to adopt and maintain healthful practices and life styles;
4. Foster teaching and communications skills in all those engaged in educating consumers about health;
5. Advocate changes in the environment that will facilitate healthful conditions and healthful behavior; and
6. Add to knowledge through research and evaluation concerning the most effective ways of achieving these objectives."⁹

These activities reflect the growing emphasis being placed on an individual's responsibility to preserve his/her own health. However, attitudinal changes alone are not sufficient. The individual must also have some minimal knowledge concerning preventive measures, proper utilization of the health care system, accessibility and quality of services, in addition to the financial means to take advantage of this information. It should be noted, that consumers should understand not only when and how to use the system properly, but also when not to use the system.

A. COMMUNITY HEALTH EDUCATION

1. Comprehensive School Health Education

Introduction

Since many of the antecedents associated with four of the five leading causes of death in Missouri in 1977 (heart disease, cancer, cerebrovascular disease, and accidents, see Health Status, Section 3.2) are related to behavior patterns which are addictive and not readily amenable to change, education of the population should be initiated in early childhood before the basic patterns of health-related behavior are firmly established. One place for obtaining longlasting results is within the school system before adverse habits have been acquired. "The school setting provides an environment where they can learn to think critically, solve problems, practice self-direction, and acquire a sense of social consciousness in relation to health matters."¹⁰

Research¹¹ has shown that the cessation of health-damaging activities (smoking, excessive alcohol consumption, obesity, hypertension, and sedentary habits) tends to reduce certain chronic illnesses. One method of impacting on current life style of adults is through the education of students. The information and knowledge about healthful behavior brought home by children may have an influence on the life style of older family members. In order to facilitate this process, schools should provide wider opportunities for more formal and informal interactions between family members. These efforts may result in more immediate reductions in morbidity and/or mortality due to heart disease, cancer, stroke, accidents, suicide, and homicide.

Currently, the health care industry is the second largest industry in the nation. Money going to health education is 0.5 percent of the total budget for health in the United States.¹² Yet, the health care system is decreasingly able to correct for negative behavior which leads to health problems. Development of desirable habits must be undertaken at the elementary and secondary school levels; however, it must be realized that results will not be immediately visible. We must be willing to invest adequate resources over an extended period of time.

Desired System

Availability

A comprehensive school health education (C.S.H.E.) program grades K-12 should be implemented in every school district in Missouri.

Accessibility

Educational services are accessible to every school age child in Missouri. Therefore, when C.S.H.E. is implemented in every district, it will be accessible to all school age children.

Cost

Any weighing of costs must be balanced against the long range costs of not educating children in health matters.

Acceptability

Comprehensive school health education should be an integral part of the local community health education program. Although the minimum content areas recommended later under Quality should be addressed, curriculum should be written by the local school district. An advisory council made up of local health educators, providers of health care, voluntary associations, parents, students, and others can be helpful to the schools in meeting the varied health-related issues and problems affecting and influencing their students. Consideration should be given to different health education needs of groups within the district as well.

Continuity

Continuity is an integral part of a comprehensive school health education program. In writing curriculum, consideration should be given to what health knowledge the child brings with him/her when entering school and what areas should be addressed at each level of the child's education. Repetition of content areas in increasing depth is important as the child progresses through school. However, consideration should be given to variations in priorities, interests, and needs at the local level in deciding what is the appropriate age level for each topic to be addressed. Ideally, a K-12 program would be coordinated with adult education and college and university health education programs.

Quality

Quality is a key issue in comprehensive school health education. The curriculum of a comprehensive school health instruction program which develops health knowledge, attitudes, and behavior should be presented in such a manner that students will be able to:

- "1. Develop a positive self concept with concern for the health and safety of oneself and others;
2. Develop decision-making skills which will assure healthful consequences;

3. Appreciate and enjoy activities which will assure physical development and maintain fitness;
4. Develop communicative skills which enhance one's state of health and well-being in a positive manner;
5. Understand one's physical and mental strengths and cope with health problems of everyday life; and
6. Develop positive health habits and self-directed life-style that will promote a desirable set of values.¹³

A number of model comprehensive school health education programs have been developed throughout the United States. In 1974, the Missouri Department of Elementary and Secondary Education developed a scope and sequence guideline to be utilized in the development of a school health curriculum. This guideline covers nine broad areas to be taught sequentially in grades K-12 (Table 3.3-1).

TABLE 3.3-1: A SUGGESTED SCOPE AND SEQUENCE CHART¹⁴

TOPIC	GRADE			
	K-3	4-6	7-9	10-12
Disease Control	I	B	H	H
Nutrition	I,B	H	C	R
Environmental and Community Health	I,B	B	H	R
Consumer Health	I	I,B	B	H
Personal Health	I,B	H	C	R
Safety and First Aid	I,B	B	H	R
Mental Health	I	B	H	C
Family Life and Sex Education	I	B	H	C
Substance Abuse	I	B	H	C
Key: I - Introduction; B - Basic content development; C - Continuing emphasis; H - Heaviest emphasis; R - Reinforcement of content.				

A seventh activity which should be included in this list is that of providing the student with information on the availability of services to enable him/her to determine how and when to use the health care system. Individuals need to be taught the role and functions of the various providers within the health care system if they are to utilize the system more efficiently and effectively.

The program should be comprehensive, integrated, and sequential. The curriculum should include the following broad areas: disease control; nutrition; environmental and community health; consumer health; personal health; safety and first aid; mental health; family life and sex education; and substance abuse. The content and method of presentation should be geared at each grade to the maturation level of the child.

A second quality issue is the level of teacher training in the area of health. In the primary grades, health can be integrated with other subjects and taught by the classroom teachers. In-service training programs in health should be developed through the school districts and coordinated efforts of all colleges and universities in the state. At the secondary level, health should be taught by a certified health teacher.

Curriculum should be revised and updated on a regular basis. Measurable evaluative criteria should be made an integral part of the curriculum.

Comparative Analysis

Availability

There is a need for more research on the current extent of health education in Missouri's 557 school districts. The limited number of surveys administered so far have at best measured what the superintendent of schools thinks is being taught in his/her schools (which tends to reflect the formal requirements; i.e., numbers of units at the secondary level). To some extent, health is taught in most districts, but in an unplanned, non-sequential manner with a limited number of content areas covered. Comprehensive school health education is available in only a few districts.

Accessibility

Comprehensive school health education is not accessible to most children in Missouri.

Cost*

Acceptability*

Continuity

Except in a few districts with comprehensive school health education curriculum, there is no continuity to health education in Missouri schools. Some content areas are taught simultaneously in more than one course, and

others aren't touched on adequately. There is no attempt made to build on prior knowledge at each level. What planning there is occurs within the grade level rather than across grade levels.

Quality

The present level of quality in school health education has been reviewed under Continuity. Without a planned, sequential, comprehensive curriculum, grades K-12 health will continue to be taught in a sporadic, uncoordinated manner. Teachers in most districts receive no in-service training. At the secondary level, health is taught mostly by teachers whose training and often interest is in other subject areas including physical education, science, home economics. They may have been trained in one aspect of health, but not the full spectrum of content areas.

Problem Description

1. Comprehensive school health education exists in only a few school districts in Missouri.
2. Without a strong state level policy (regarding C.S.H.E.) progress toward this program will be slow with only partial success. When the State Department of Education takes a strong position on any program, there is often a high level of compliance at the local level.
3. Health education, when taught, is presented in sporadic, uncoordinated manner.
4. There is a shortage of qualified teachers to coordinate programs within school districts and teach at the secondary level. There are few in-service training programs for teachers at the elementary level.
5. Funding sources to implement a C.S.H.E. program have not been identified.
6. Adequate evaluative criteria have not been developed, and, concurrently, a definition of minimum content for a C.S.H.E. program is lacking.

Goals, Objectives, and Actions

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE ILLNESS THROUGH THE IMPLEMENTATION OF A COMPREHENSIVE SCHOOL HEALTH EDUCATION PROGRAM IN EVERY SCHOOL DISTRICT IN MISSOURI.

OBJECTIVE 1: By 1981, the Department of Elementary and Secondary Education should develop a strategy for implementing Comprehensive School Health Education.

Recommended Action 1: Comprehensive school health education should be included in the classification and accreditation standards of the Department of Elementary and Secondary Education. To quote from the Handbook of Classification and Accreditation of Public School Districts in Missouri, (p. 35, Curriculum - High Schools): "The curriculum shall provide opportunities for educational experiences which will enable each student to develop rational procedures for being a contributing member of our complex society ... It shall stimulate the development of moral convictions and value competencies."¹⁵

Recommended Action 2: Health education guidelines should be developed by the state to be utilized in initiating, expanding, or improving local curriculum to assist in the development of life-coping skills.

Recommended Action 3: A Guide for Developing a Comprehensive K-12 School Health Instruction Program¹⁶ should be utilized as the main reference in the further development of state guidelines.

Recommended Action 4: Twenty school districts (one in each Regional Planning Commission) should be identified to act as model programs in the development of Comprehensive School Health Education.

Recommended Action 5: Developmental funds should be made available to several demonstration schools to assist in the development of model health education curricula and implementation strategies.

OBJECTIVE 2: By 1983, the State Department of Elementary and Secondary Education with the assistance of the Division of Alcoholism and Drug Abuse and the Division of Health should establish as an ongoing program a resource center to support, assist, and evaluate local school programs. Minimally, the resource center should:

1. state that there should be an integrated comprehensive school health education program taught in grades kindergarten through twelve in every school district, and act as a resource for developing model comprehensive school health education programs;
2. develop criteria and standards for effective Comprehensive School health education;
3. provide for each school district to submit a written planned curriculum to them for review and approval;
4. provide information on and access to a central clearinghouse for educational literature, films, and other materials (housed in the Division of Health);

5. establish implementation strategies;
6. establish a review mechanism;
7. provide sufficient funding or assistance in locating funding sources; and
8. provide for monitoring and an adequate mechanism for evaluating each program reviewed.

OBJECTIVE 3: By 1983, each school district should have written a planned health education curriculum and implementation strategy which is in compliance with the State Department of Elementary and Secondary Education guidelines.

OBJECTIVE 4: By 1982, the Missouri Division of Health with the assistance of the Department of Mental Health (Division of Alcoholism and Drug Abuse) should establish a central reference and clearinghouse for school health literature, films, and other educational material.

Recommended Action 1: The Missouri Division of Health should act as a coordinator for the accumulation and distribution of health related material available for schools. Currently, there is no central point from which a school instructor can request health related material; each topic must be obtained from separate sources.

Recommended Action 2: This central clearinghouse should be under the guidance of a health education specialist who would review the material and classify it by topic as well as by grade and/or maturation level.

OBJECTIVE 5: By 1981, the Department of Elementary and Secondary Education and the Department of Higher Education should develop in-service training programs for teachers in the area of health education.

OBJECTIVE 6: By 1983, the Missouri Division of Health, Department of Elementary and Secondary Education, and the Department of Mental Health in cooperation with schools should begin to offer school health education programs to reach other members of the community.

Resource Requirements

1. Existing schools and teachers
2. Community Health Educators
3. Certified Health Education Teachers
4. Community Health Leaders
5. Health Education Departments in colleges and universities
6. Textbooks and other educational materials

2. Health Education in Business and Industry

Introduction

Traditionally, health education in industry has focused on safety hazards or health hazards due to unsafe levels of toxic substances. While there is need for continuing attention to these problems, there is an increasing awareness of the importance of using the workplace to present general health education. Today "for every industrial accident death, there are now 50 cardiovascular casualties."¹⁷

Health education in the workplace impacts on a sizeable portion of the adult population. It has the potential for benefits to industry in increased productivity and lessened life and health insurance rates and the benefit to the employee in the reduction of incapacities due to both short term health problems and to later chronic illness through early intervention.

Desired System

Availability

Health education programs should be provided through coordinated programs by all employers and unions in the State of Missouri.

Accessibility*

Cost

Cost is related to quality. The more services offered, the higher the direct costs will be. However, the costs of offering health education services must be weighed against increased productivity and potentially lower group life and health insurance premiums. The Kansas Plus program recommends sharing the costs among health insurers; employers and employees (as an add-on to employee fringe benefit packages); and government.¹⁸

Quality

There is a range of levels on which health education programs can be offered. General prevention materials can be offered in the form of pamphlets, films, and speakers. Physical fitness programs can be organized around a range of activities. St. Louis University Medical Center has developed an employee fitness program that includes gymnastic programs, intramural sports and trips (skiing). Central to potentially

cost-effective health education are programs like the Kansas Plus model which consists of eight phases designed to "identify precursors to chronic illness (including high-risk life styles) and to provide the worker with the incentive information, opportunity, and support to change his/her behavior by a series of programs called intervention."¹⁹ The phases in the Kansas Plus model are:

1. A written wellness inventory on health with questionnaire
2. Selected screening tests
3. Physical fitness screenings
4. A complete nursing assessment
5. Summary of findings
6. Counseling regarding findings and an agreement upon the interventions needed and desired by the worker
7. The interventions prescribed for each individual
8. Follow-up and evaluation.

The extent of services offered by the employer will depend on the resources available, according to the size of the industry. It is possible that labor unions can provide or supplement health education programs for small businesses which do not have the resources available.

Acceptability

Health education programs should be designed to fit the educational level, ethnic background, financial resources, and occupation of the worker. The potential health problems of a white collar worker are not identical to those of a factory worker. To avoid fragmentation, however, an industry-wide program should be designed taking into consideration special needs of various workers.

Comparative Analysis

Availability

Health education has traditionally centered around two areas: protection of the worker from industry specific health hazards and screening for problems which are directly related to job performance (e.g., airlines screen pilots for health problems which could result in accidents). While there are indications that interest is increasing, at present very few employers in Missouri provide general health education programs, and yet it is a setting which reaches a sizeable portion of the adult population. Industries are becoming increasingly aware of the negative effects

of the rising costs of health care. Labor unions are conscious that increased insurance premiums are taking a larger and larger portion of employee benefits and potential wage increases. While there are some national industries that have well developed health promotion programs little research has been done to evaluate the cost-effectiveness of these programs.

At present Blue Cross in St. Louis is making available to member industries a packet of health education materials with several brochures on how to implement a program in their company.** They are exploring the possibility of acting as a liaison between a company and a local health care provider who will administer a series of screening tests to employees. They cannot as yet determine if use of diagnostic screenings will be cost-effective.

Accessibility*

Cost*

Quality

The limited number of programs offered in Missouri at present center around one aspect of health education, i.e., physical fitness (probably most common) or occupation specific screenings.

A high percentage of workers in Missouri are employed in small businesses. Therefore, health promotion programs for business and industry will have to be designed which are financially feasible for small businesses.

Acceptability*

Continuity*

Problem Description

1. Very few businesses or industries provide health promotion services for their employees.
2. Costs to employers in the form of insurance premiums (and

** "Unhealthy Employees Cost You Money . . ."
Blue Cross/Blue Shield
St. Louis, Missouri

to employees in lost benefits) have risen rapidly and are continuing to rise.

3. National studies of the cost effectiveness of industrial prevention programs have not been done.
4. Health promotion program models to meet the needs of various sizes of industries have not been developed.

Goals, Objectives, and Actions

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE ILLNESS THROUGH THE PROVISION OF HEALTH PROMOTION SERVICES BY ALL EMPLOYERS AND UNIONS IN MISSOURI.

OBJECTIVE 1: By 1983, 10 percent of businesses and industries in Missouri should have developed health promotion programs for their employees at all levels.

Recommended Action 1: An evaluation should be made of the national programs that are already in existence to determine:

1. cost-effectiveness, and
2. percent of employees using the program.

Recommended Action 2: Health promotion models to meet the needs of various employers should be developed.

Recommended Action 3: A coalition of Missouri employers and employees interested in health promotion in business and industries should be formed.

Recommended Action 4: Each HSA in Missouri should organize a meeting of employers and unions in their area interested in increasing health promotion activities on the job.

Resource Requirements

1. Public health departments.
2. Health Education departments in colleges and universities.
3. Third-party payors.
4. Health Systems Agencies.
5. Community health leaders.

3. Community Health Education by Providers of Health Care

An analysis of health education services in physicians' offices and hospitals can be found later in this section under Well Person Maintenance.

In addition to patient education, some health education services provided by hospitals are designed to serve the community. "When programs are sponsored by a hospital, there may be an unbroken continuum of those designed for asymptomatic community groups, ambulatory patients, and inpatients."²⁰ Hospitals have resources and expertise available to provide programs for the community as a whole. Community programs can cover a range of topics including: employee health seminars, stop-smoking programs, hypertension education, and alcoholism and drug abuse programs. A major problem for these programs is that unlike patient education, third-party payors do not reimburse for community health education.

The St. Louis HSP identifies the following five characteristics for community health education in hospitals:²¹

- a. A series of open and widely advertised documented programs based on the needs of the residents of the general "catchment area" of a given hospital (i.e., within reasonable geographic proximity irrespective of inpatient service utilization).
- b. Community input into the planning and development of such programs.
- c. Coordination among the hospitals in the same general area to prevent unnecessary duplication of comparable programs.
- d. Identification and acquisition of funding sources for hospital-based community education projects, with special emphasis on high-risk and/or areas otherwise underserved by health education resources.
- e. Long-term efforts to investigate continuous funding sources for effective and appropriate hospital-based community education programs.

According to the St. Louis HSP, 20 percent or less of their area hospitals offer some community health education with major emphasis being on prenatal and alcohol and drug dependency classes.²²

Clearly if these programs are to be expanded, efforts will need to be made to identify ongoing funding sources and a mechanism established to coordinate programs among area hospitals.

Goals, Objectives, and Actions

(For Goals, Objectives, and Recommended Actions see Well Person Maintenance, Section 3.4.)

4. Health Education in Public Health Departments

Introduction

"The basic concept of the Division of Health is the promotion of the people's health and the prevention of disease."²³ Public Health Departments are to determine the health status and health needs of the people within their areas; to determine to what extent needs are currently being met; and to take actions to see that unmet needs are met.

The Division of Health defines the various roles in the network of state, district, and local offices as follows.²⁴

Central Office

The activities at the central office related to public health are those of statewide planning, counseling, and financing. There are certain services rendered by the Division of Health which are so technical or specialized in nature that they cannot be decentralized to districts or local units. The activities and programs of the central office are carried out by their six sections (Disease Control, Local Health Services, Hospital and Technical Services, Laboratory Services, State Center for Health Statistics, and Medical Care).

District Office

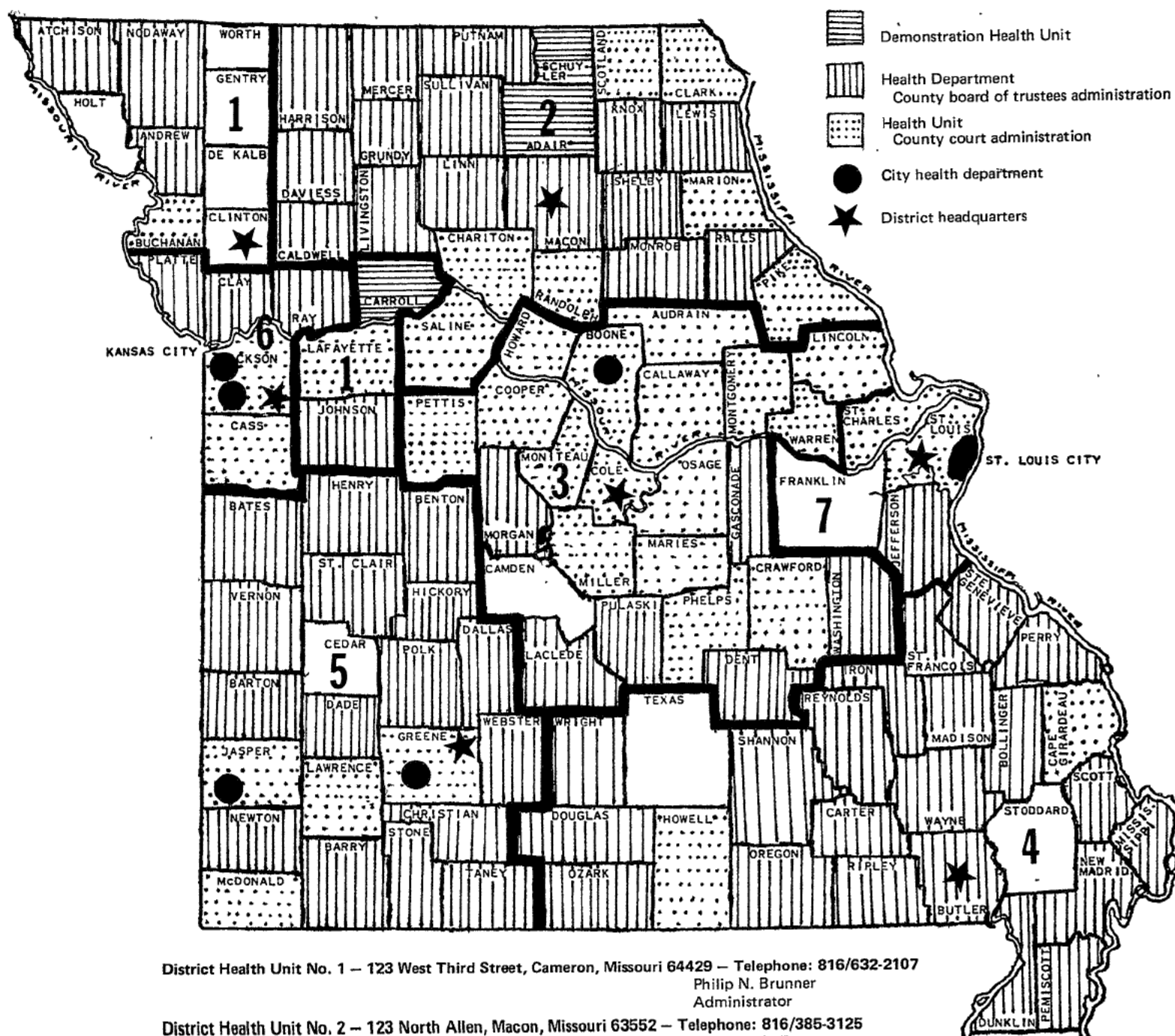
The district boundaries and offices are shown on the following map. The staff normally consists of a health officer, nurses, health educators, health program representatives, sanitarians, and an administrative and clerical staff. Districts 4 and 5 also have public health laboratories. Basically, the district offices serve to support and supplement the work of the local health units.

Local Health Units

Under state law, a county may establish either a mill tax supported health department, which is governed by a board elected by the voters, or it may establish a county court-supported health unit or nursing service. City governments may also establish health departments. Units at the local level are responsible for working with both public and private health service providers in the enforcement of state laws at the local level. Certain environmental health activities are performed by local units that are staffed with qualified environmental personnel. Local units also assume responsibility for promoting the health of the school children, developing well baby clinics, maternity clinics or such public health facilities as may, in the opinion of the citizens of that county, be needed to protect the health of its people.

MAP 3.3-1

DISTRICT AND COUNTY HEALTH SERVICES



District Health Unit No. 1 – 123 West Third Street, Cameron, Missouri 64429 – Telephone: 816/632-2107

Philip N. Brunner
Administrator

District Health Unit No. 2 – 123 North Allen, Macon, Missouri 63552 – Telephone: 816/385-3125

Wayne V. Lehr, D.O.
Consultant Health Officer

Kenneth G. Freeman
Acting Administrator

District Health Unit No. 3 – 907 Missouri Boulevard, Jefferson City, Missouri 65101 – Telephone: 314/751-4216

E. E. Van Vranken, M.D.
Health Officer

LeRoy E. VanLoo
Administrative Assistant

District Health Unit No. 4 – 1812 South Broadway, Poplar Bluff, Missouri 63901 – Telephone: 314/785-9634

A. Z. Tomerlin
Administrator

District Health Unit No. 5 – 1150 East Latoka, P. O. Box 777, Springfield, Missouri 65801 – Telephone: 417/883-1555

Olin A. Griffin, M.D.
Health Officer

District Health Unit No. 6 – 615 East Thirteenth, Kansas City, Missouri 64106 – Telephone: 816/274-6385

Richard Brown
Administrator

District Health Unit No. 7 – 1501 Locust Street, St. Louis, Missouri 63103 – Telephone: 314/621-1551

William Goldman
Administrator

Local health units receive financial support from the Division of Health as well as direct assistance in solving their problems. Except for certain specialized programs, the services of the Division of Health reach the people through their district and local Departments.

Counties or cities may cooperate with other units in forming multi-governmental local health units.

Desired System

Availability

All counties should have a public health unit, or combined city-county units in large urban areas.

Accessibility*

Quality

The following personal and environmental health programs and services are core services for a model public health unit and should be provided either in-house or by referral:

1. home care nursing (the American Public Health Association recommends that there should be one community health nurse for every 2,500 population for home health care);
2. common public health screening (e.g., diabetes, tuberculosis, venereal disease, hypertension, heart disease, cancer);
3. maternal and child health programs (e.g., prenatal clinics, well child programs, family planning programs, etc.);
4. national health programs (referral and counseling);
5. information and referral;
6. communicable and chronic disease control programs;
7. follow-up on patients as directed by the patient's physician;
8. community health education and school health programs (the American Public Health Association recommends that there should be one Health Educator for every 100,000 population);

9. sanitation (e.g., restaurant, dairy, grocery store, food processor, bakery inspection, solid waste disposal, rodent control, weed control, and landfill inspections); and
10. nuisance complaints.

Beyond these core programs, other services for larger units (population of 25,000 or over) might include:

1. dental health;
2. screening for speech, vision, and hearing;
3. mental health follow-up;
4. occupational health
5. certified home health care;
6. alcoholism counseling;
7. water pollution;
8. air pollution;
9. emergency medical services training (e.g., CPR) and support.

A public health unit may choose to provide these programs either directly or through a 'purchase of service' contract if it is not feasible to maintain its own specialized staff.

The American Public Health Association recommends that there should be a ratio of one community health nurse per 5,000 population. For home health care services, the ratio should be one community health nurse per 2,500 population. The ratio of nursing supervisors to community health nurses is one supervisor for every 8 to 10 nurses.

Cost*

Acceptability*

Continuity

Public health units should act as a referral agency to appropriate services within the community.

Comparative Analysis

Availability

At this time, 9 counties do not have any type of local health unit. These counties are provided services by the Division of Health district office, however, due to manpower limitations, programs and services are limited. One county has a demonstration unit (set up by the Division of Health, Bureau of Local Health Services) where within the next 18 months, a local election will take place for mill tax support. Seventeen counties have voted in tax supported units since April, 1976.

Accessibility*

Cost*

Acceptability*

Quality

Of Missouri's 114 counties and the City of St. Louis, 21 have very limited services as they employ one nurse and perhaps some support staff consisting of a nurse assistant or L.P.N. and/or clerk/typist. Sixty-six counties do not have any professional manpower beyond the basic nursing staff. That is, they have no sanitarian, therapists, health educators, dental manpower, or health officer.

The current ratio in Missouri of community health nurses to population is, on the average, one to 10,000. The ratio of nursing supervisors to nurses is one supervisor for a range of 20 to 44 community health nurses.

With the identification of programs of health prevention and promotion as statewide priorities, and the expressed need for the delivery of more preventive health care, local public health manpower and programs must be expanded. Services such as immunization, family planning, child health conferences, and screening have all been discussed as services in need of expansion in many areas. Staff salaries are paid in part by the state based upon the locality's 'real property' valuation for tax purposes so that the entire burden does not fall solely on the locality.

Health educators are placed in the District Health Offices. There is a State Bureau of Community Health Education but the health educator in charge is given no supervisory capacity over the district health educators. At the local level most health education services are provided by the public health nurse, approximately 90 percent of whom were trained in associate degree programs (two years) or diploma programs (three years).

In general, the baccalaureate degree programs (four years) are the only programs that have fully developed community health nursing education (approximately 10 percent of nurses in public health offices). The other programs are illness and clinical-skill oriented. Additional in-service educational opportunities for nurses in Public Health Units are provided by the Bureau of Community Health Nursing of the Division of Health.

Continuity*

Problem Description

1. Nine counties in Missouri do not have public health units and, therefore, are underserved in the range of services provided by such units.
2. Currently, there is one health educator for each of the seven district offices plus the health educators in St. Louis and Kansas City. This does not meet the American Public Health Association recommendation of one health educator for every 100,000 population.
3. Health education services provided by the Division of Health are not coordinated through any single bureau. Therefore, it is difficult to evaluate the quality of services.
4. No evaluation has been made of the quality or type of health education currently provided in public health units. Community health education services as well as patient education should be provided and evaluated.

Goals, Objectives, and Actions

GOAL: TO ENSURE THAT THE CORE PUBLIC HEALTH, ENVIRONMENTAL, AND HEALTH EDUCATION PROGRAMS AND SERVICES ARE AVAILABLE AND ACCESSIBLE TO RESIDENTS OF EVERY COUNTY IN MISSOURI. (SEE DESIRED SYSTEM FOR DETAILED PROGRAM AND SERVICE DESCRIPTION).

OBJECTIVE 1: By 1981, counties should 1) examine their need to increase the staff of their units so that needed services might be initiated or expanded, or 2) examine their area for sources to meet needs, whichever is more appropriate.

Recommended Action 1: Among many possible resources available the following have been initially identified.

1. The public health units should contact the Regional Directors of the Division of Alcoholism and Drug Abuse regarding: a) alcoholism counseling services in their counties; b) emergency medical service training available through the Division; and c) alcohol and drug abuse training in general.
2. The Prevention Network (Division of Alcoholism and Drug Abuse) should be included as a resource for tapping programs which can provide needed services.
3. The Division funded Prevention services in each of the Department of Mental Health planning regions should be included as a resource for providing health education services and other experimental learning experiences, (medicine safety programs, healthy minds/healthy bodies, ropes courses, school information sessions on alcoholism).

OBJECTIVE 2: By 1982, there should be no counties without a public health unit.

OBJECTIVE 3: During 1979, the number of public health nurses in local units around the state should be increased by 10 percent.

OBJECTIVE 4: During 1979, the number of environmental sanitarians in local units around the state should be increased by 10 percent.

OBJECTIVE 5: By 1980, public health units in counties with over 25,000 population should provide all 19 services (either in-house or by referral) listed in the desired system.

OBJECTIVE 6: By 1982, there should be one health educator for each Regional Planning Commission in Missouri.

5. Health Education Services by Voluntary Associations

There are some 70 national health and health-related agencies and organizations affiliated with the National Health Council,²⁵ many of which have chapters in Missouri. Traditionally, much of the health education in Missouri has been provided by these agencies.

The goal of these voluntary agencies is general public education focused on their particular area of concern. Most of the educational programs are developed nationally and are presented via media, pamphlets, and other broad means of reaching the public. To name a few of the more well known agencies: the Cancer Society, Heart Association, Red Cross, National Safety Council, March of Dimes, and the American Lung Association. Many of the agencies sponsor an annual campaign during which they focus much of their resources and media educational programs.

Desired System

Availability*

Accessibility*

Cost*

Acceptability

Health education materials - pamphlets, media spots, etc. - should be designed to communicate with specific cultural groups. This would require that a range of programs be developed dealing with each specific area of concern.

Quality

Evaluation of programs to determine if they are reaching the target group and if they result in the appropriate behavior change should be instituted. Quality of program also relates to acceptability. They should be designed to reach specific groups.

Continuity

The life style behaviors that adversely affect health are responsible for the onset of a variety of illnesses. Although voluntary agencies focus on specific health areas (cancer, heart disease), they share many of the same life style concerns. Nutrition affects a range of illnesses, as does alcohol, smoking, etc. Therefore, coordination and cooperation

among agencies is essential to avoid duplication, overlap, and sometimes the presentation of conflicting information. Encouragement of a healthy life style, following the seven principles listed on page 162, would result in a decrease in many forms of illness and contribute to a more favorable outcome on others (i.e., diabetes). A pooling of resources to accomplish this end, together with a sharing of educational materials, would result in increased capacity to reach the public with an often common message. Additionally, coordination should be established between services of voluntary agencies and similar educational services provided by volunteers in hospitals.

Comparative Analysis

Availability*

Accessibility*

Cost*

Acceptability

At present the health education messages presented by most voluntary agencies are designed to reach a general audience. In the few instances where the message is specifically focused, it tends to be a health problem of that group only (lead poisoning in low-income areas or sickle cell anemia among blacks for instance). When the problem is one which affects all groups (cancer, heart disease), the health education programs are aimed at a general, usually middle-class audience. The effectiveness of the communication, especially in low-income communities, is questionable.

Quality

Evaluation of health education programs generally is almost nonexistent. Evaluation would allow a determination to be made as to whether the particular program is reaching the targeted group and if the intended behavioral change has occurred.

Continuity

Voluntary associations have tended to operate in isolation from each other. Instead of cooperating, they often see each other as rivals, especially for funding.

Problem Description

1. Health education messages are rarely targeted at a specific audience.
2. There is virtually no coordination or communication between voluntary associations.
3. Significant evaluation and determination of cost-benefits and cost-effectiveness of health education efforts is negligible among voluntary health agencies. .

Goals, Objectives, and Actions

GOAL: TO INCREASE COMMUNICATION AND COORDINATION AMONG PUBLIC AND VOLUNTARY HEALTH RELATED ASSOCIATIONS.**

OBJECTIVE 1: By 1981, a coalition of voluntary health associations should be formed.

Recommended Action 1: A task force of the SHCC should be created to reset priorities to include voluntary health associations.

Recommended Action 2: Formal cooperation should be established between the SHCC and the Statewide Comprehensive Health Education Coalition.

Recommended Action 3: The SHPDA should contact 20 voluntary health associations to begin communication and cooperative activities.

**As a first step, the SHCC should support the Division of Alcohol and Drug Abuse's effort to increase communication and coordination among Voluntary Associations by encouraging the participation of those departments and community, state, and volunteer organizations which individually impact alcohol and drug issues in the First Annual State Alcoholism and Drug Abuse Forum scheduled for September 12, 1979. The intended outcome of this forum is to develop a corporate strategy for addressing alcoholism and drug abuse and related issues.

B. MOTIVATION TOWARD POSITIVE HEALTH BEHAVIORS

1. Financial Incentives

Introduction

Currently, most reimbursement is for diagnosis and treatment of illness (especially hospitalization), as opposed to health promotion programs, including health education. Under the present system it is financially more feasible for a person to wait for the onset of an illness than it is to have the illness prevented and/or diagnosed or treated early. At all levels of health promotion, there are promotion and education programs which could lower health care costs (e.g., patient education, screening). However, these programs are the ones that are reimbursed the least.

Desired System

Availability

Medicare, Medicaid, private insurers, and Blue Cross/Blue Shield should increase coverage for patient and other health education, screenings, well-person maintenance programs, and early diagnosis and outpatient treatment. In addition, treatment for problems which result in illness should be reimbursed (psychiatry, counseling, alcoholism). Prepaid plans should include such services in their programs. Deductibles for in-patient care could then result in: 1) encouraging health promotion through positive life style and early intervention, and 2) cover the costs of the additional outpatient programs.

Secondly, financial incentives should be offered to businesses and industries in the form of a reduction of the rate of increase of their group life and health insurance premiums if they adopt employee health promotion programs (see Health Education in Business and Industry).

At the State and Federal level, tax incentives should be provided for people who present evidence of a physical and dental examination within the last year. Additional incentives can be given for steps taken to correct an existing condition.

Accessibility*

Acceptability*

Quality*

Cost

The costs of the added coverage in the short run should be considered against the potentially lowered cost of an improved health status.

Continuity

Reimbursement should be provided at all stages of wellness through illness with the incentives on the wellness end of the spectrum.

Comparative Analysis

Availability

At present, financial incentives are almost the complete reverse of that described under the Desired System. To quote from Kristein, et al, in "Health Economics and Preventive Care":

"Approximately 90 percent of our population have some type of insurance covering hospital care, and almost as many have coverage for physicians' services performed in hospital. Relatively few people, however, are able to obtain insurance that pays for a substantial amount of preventive or ambulatory care - in other words, that rewards the physicians for keeping patients out of the hospital. Most medical insurance policies will pay 80 percent of all medical expenses over a certain minimum but do not cover periodic preventive services not related to a specific diagnosis or medical complaint."²⁶

If the insured were to determine his/her health behavior strictly on the basis of finances, he/she would certainly choose to: 1) never go for a checkup, 2) not seek diagnosis and treatment of a problem at early stages, and 3) wait for any problems to become acute enough to put him/her in the hospital.

Some insurers are beginning to investigate the possibility of reimbursing for a greater range of outpatient services and a few are considering financial incentives for health promotion activities, particularly through group plans. Blue Cross of St. Louis is currently working on a pilot program of screening which they hope eventually to offer to participating employers. Blue Cross Associations and Health Insurance Associations of America nationally are encouraging reimbursement for health education, but few member plans have as yet acted.

Problem Description

There are several major problems in shifting the emphasis of reimbursement from acute care to prevention:

1. The health insurance industry must deal with competition. They must write plans which they can market to the public (including group, as well as individual plans). Therefore, if they increase preventive coverage but reduce acute care coverage, they would run the risk of putting themselves in a less competitive position. Most people think of insurance as protection against disaster (acute care).
2. The long-range cost effectiveness has not been determined. If the insurance companies take on preventive care without reducing inpatient costs, they will be losing and not gaining ground.

Goals, Objectives, and Actions

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE ILLNESS BY PROVIDING FINANCIAL INCENTIVES FOR HEALTH PROMOTING BEHAVIOR.

OBJECTIVE 1: By 1983, third-party payors should develop incentive premium schedules for individuals who practice good health habits, and should develop reimbursement coverage for health promotion and health maintenance procedures performed on an outpatient basis.

Recommended Action 1: Coverage for patient and other health education, screenings, well-person maintenance programs, and early diagnosis and outpatient treatment should be increased. Concurrently, deductibles for inpatient care should be increased. Gradually, the ratio favoring inpatient care over other kinds of care should be reversed.

Recommended Action 2: Financial incentives for employee health promotion programs should be offered.

OBJECTIVE 2: By 1982, Medicare and Medicaid reimbursement should include patient and other health education, screenings, well-person maintenance, and early diagnosis and outpatient treatment.

OBJECTIVE 3: By 1982, tax incentives should be devoted for health promoting behavior.

Recommended Action 1: Evidence of a physical and dental examination within the last year should count as a tax exemption.

2. Media

Introduction

Ninety-six percent of the American homes have one or more television sets. The average television set is on more than six hours a day.²⁷ As is evident, there is great potential for use of the media in presenting health promotion information which will reach a large segment of the population.

Desired System

Availability

There are six areas in which health promotion can have an impact through the use of television:

1. Accuracy and ethical responsibility in health or health related advertising;
2. Public affairs shows oriented toward health problems and causative life style-environment factors;
3. Items regarding health on the news;
4. Public service announcements that are health educational;
5. Primarily entertainment shows that present health information accurately (Marcus Welby, M.D.); and
6. A general emphasis throughout television shows on positive rather than negative life styles (especially during children's programming).

Accessibility*

Cost*

Quality

Quality relates to availability.

Acceptability*

Continuity*

Comparative Analysis

Availability

A 1971 Harris Poll found that 29 percent of the American people get most of their health and medical information from TV advertising, 28 percent from newspaper medical columns, 26 percent from magazines, and 25 percent from TV medical news. The media were exceeded only by doctors (51 percent).²⁸

Quality

In a study conducted by Lewis and Lewis, it was found that 70 percent of TV health messages (mostly commercials) were believed by the 5th and 6th grade children they surveyed. Forty-seven percent believed everything they saw.²⁹ In a 1970 survey of a TV network channel by Wayne State University School of Medicine, only 30 percent of the health time offered useful information while 70 percent was inaccurate or misleading or both.³⁰ In addition to the misleading health information presented on TV, the media also presented a positive image of behavior which is destructive (drinking, smoking, etc.).

In recent years, there have been relatively few programs which deal accurately with health. The national "Not for Women Only"^{**} has presented a series of topics on health. In Missouri, Al Wiman, working for St. Louis's Channel 4 (KMOX-TV), has received awards for his work in bringing health promotion and other health issues to television. One of his more interesting approaches has been to incorporate health prevention items into the news segment. A two-week series on the benefits of running included films from the heart association and a jogging contest. One of the major pluses to this programming is that it reaches a large segment of the viewing audience.

Accessibility*

Cost*

Continuity*

Acceptability*

^{**}"Not for Women Only" is an NBC feature program hosted by Barbara Walters.

Problem Description

A large percentage of the American population uses the media as a chief source of health information.

Over half of the health or health related information presented by the media is misleading or inaccurate.

The life style image presented by the media fosters negative health behaviors (e.g., smoking, drinking, violence, speed).

The most heavily influenced portion of the population are children.

Goals, Objectives, and Actions

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE ILLNESS BY MOTIVATING POSITIVE HEALTH BEHAVIOR THROUGH THE MEDIA.

OBJECTIVE 1: By 1981, the advertising industry and television should establish a council to provide leadership in developing accurate and ethically responsible health education programming.

OBJECTIVE 2: By 1980, the Federal Communications Commission in cooperation with DHEW should develop standards for television programming and advertising on health.

ENDNOTESHealth Education

¹For further discussion of this see the following: U.S. Department of Health, Education, and Welfare, Forward Plan for Health, FY 1977-81, DHEW Publication No. (OS) 76-50024, (June 1975); John H. Knowles, "The Responsibility of the Individual," Daedalus, Journal of the American Academy of Arts and Sciences, 106:1 (Winter 1977); U.S. Department of Health Education, and Welfare, Forward Plan for Health, FY 1978-82, DHEW Publication No. (OS) 76-50046, (August, 1976); Robert J. Haggerty, "Changing Lifestyles to Improve Health," Preventive Medicine, 6 (1977); and Marc Lalonde, A New Perspective on the Health of Canadians, (Ottawa: Information Canada, April 1974).

²For further discussion of this see the following: Forward Plan for Health, FY 1977-81; Forward Plan for Health, FY 1978-82; Robert J. Haggerty; Marc Lalonde, op.cit.; Lester Breslow, "Research for Health Improvement," International Journal of Health Services, 3:1 (Winter, 1973); Nedra Belloc, "Relationship of Health Practices and Mortality," Preventive Medicine, 2:1 (March, 1973); and Warren Winkelstein, Jr., "Contemporary Perspectives on Prevention," The Bulletin of the New York Academy of Medicine, 51:1 (January, 1975).

³Lester Breslow, op.cit.

⁴Ovide Pomerlean, Frederic Bass, and Victor Crown, "Role of Behavior Modification in Preventive Medicine," New England Journal of Medicine, 292:24 (June 12, 1975), p. 127.

⁵John H. Knowles; Lester Breslow; Nedra Belloc, op.cit.

⁶Forward Plan for Health, FY 1977-81, op.cit., p. 16.

⁷John H. Knowles, op.cit., p. 62.

⁸Nedra B. Belloc and Lester Breslow, "Relationship of Physical Health Status and Health Practices," Preventive Medicine, 1:3 (August 1972).

⁹Preventive Medicine: USA, Task Force Reports sponsored by the John E. Fogarty International Center for Advanced Study in the Health Sciences, National Institutes of Health, and the American College of Preventive Medicine (New York, 1976), p. 3.

¹⁰Richard M. Means, "Can the Schools Teach Personal Responsibility for Health?" The Journal of School Health, 43:3 (March 1973), p. 172.

¹¹For further discussion of this see the following: John H. Knowles; Robert J. Haggerty; Marc Lalonde; Nedra Belloc; and Nedra B. Belloc and Lester Breslow, op.cit.

¹²Preventive Medicine: USA, op.cit.

¹³Missouri Department of Elementary and Secondary Education, A Guide for Developing a Comprehensive K-12 Health Instruction Program, (Jefferson City, 1975).

¹⁴Charles G. Fast, "Recommendations to Improve School Health Instruction," School and Community, 61:8 (April 1975), p. 35.

¹⁵Missouri Department of Elementary and Secondary Education, Handbook of Classification and Accreditation of Public School Districts in Missouri, p. 35.

¹⁶Guide, op.cit.

¹⁷Preventive Medicine: USA, op.cit., p. 32.

¹⁸Virginia Lockhart, M.P.H., "The Kansas Program for Health Promotion for Workers in Business and Industry," presented at the 24th Annual Meeting of the Conference on Health Training, APHA, Washington, D.C., November, 1977.

¹⁹Ibid.

²⁰Preventive Medicine: USA, op.cit., p. 34.

²¹Greater St. Louis Health Systems Agency, Greater St. Louis Health Systems Plan, 1978, p. v-pp-57.

²²Ibid.

²³Missouri Division of Health, Division of Health Program Statements, July 1, 1978.

²⁴Ibid.

²⁵Preventive Medicine: USA, op.cit., p. 37.

²⁶Marrian Kristein, Charles Arnold, and Ernst Wydner, "Health Economics and Preventive Care," Science, February, 1977, Vol. 195, p. 457.

²⁷Preventive Medicine: USA, op.cit., p. 39.

²⁸Ibid., p. 39

²⁹Ibid., p. 39.

³⁰Ibid., p. 39.

II. ENVIRONMENTAL HEALTH

Introduction

The American Public Health Association has defined environmental health as "... the interrelationship between the environment** and the health and well being of man. In this sense, the environment may be evaluated in terms of the physiological and psychological responses of man to the physical, chemical, and biological attributes of his environment."¹

This definition suggests that environmental health can be viewed as a complement to personal health. Where personal health defines a set of conditions internal to an organism, environmental health represents external forces acting on humans and affecting their functioning. The basic distinction between an environmental health problem and a personal health problem is the point of impact. Man made pollution (smoking, asbestos, radiation, etc.) is the prime example of an environmental health problem. It is a health hazard to all of society. However, illness in any form, caused or exacerbated by the pollution becomes a personal health problem. What has been an environmental health problem becomes a personal health problem as well. The relationship will continue to exist as it has until the causes are removed from man's environment.

The U.S. Public Health Service has attempted to define the planning process that deals with the above issue. They describe environmental health planning as "the process of surveying and analyzing both present and anticipated future external conditions and influences affecting the physical, mental, and social well being of the individual or community and then developing a method or course of action for environmental control to promote such well being."² This definition offers broad objectives but little practical guidance.

The key to defining our involvement in environmental concerns is the need to set parameters since our scope is limited by a health mandate. The starting point, therefore, is the health of the people and not the state of the environment. The basic premise is that disease prevention is essential but that we cannot deal equally with all environmental variables.

Health planning has two overriding responsibilities. The first is to assure that people are provided the best possible care when they become ill or injured, and the second is to attempt to keep people healthy - to create the kind of overall community environment that does not endanger health.

It is understandable that we spend most of our time focusing on issues related to the first responsibility, such as number of hospital beds, service cost, manpower, etc. When we are ill we want immediate and quality service. It is always hard to think about health issues when a person is healthy.

**"sum total of external forces that act on an organism."

However, there is one simple and widely known premise - often ignored; the best way to contain costs and maintain appropriate health care services is to keep people healthy. This is not a new idea and, in fact, forms the foundation of modern public health. It is emphasized here because it has been neglected or overlooked by health planning agencies in the past. Thus, the concept of prevention becomes the backbone of environmental health planning. Where it can be demonstrated that health status can be improved by environmental change, this change becomes an appropriate concern for the SHPDA and the SHCC.

In developing P.L. 93-641, the Congress established as one of ten priorities to be considered by health planning agencies: "The promotion of activities for the prevention of disease, including studies of nutritional and environmental factors (contaminants) affecting health and the provision of preventive health services."

Environmental health planning within the framework of population based health planning as authorized by Public Law 93-641 offers unique opportunities. The requirement that there be representatives of all social and economic groups in the planning process at all levels means a new input into environmental planning, particularly from those who are less mobile with respect to their environment. The law enhances the chance to obtain new understanding of man's place in the modern environment. Consumers have a significant potential -- through health planning -- for 'humanizing' the health care delivery system. Similarly, they can be expected to have a humanizing influence on planning the environment. The health planning-agency because of the scope of the participation required of various professional and consumer groups - provides a forum in which peer discussion can occur among those who are shapers and users of the environment.

Considering environmental health planning as part of the total health effort seems appropriate, for this gives it a strong base from which it can influence other elements whose environmental actions will have health consequences. Given a broad purpose, environmental health planning cannot be expected to conduct the actual planning for specific functions such as waste disposal or air pollution control when operating agencies already exist. Instead, it becomes a means by which health interests can be informed about, cooperate with and influence the planning of others who do have mandated operating responsibilities. As part of the total health planning effort, the potential value of environmental action can also be seen as an alternative or supplement to changes in the health care system as a means for maximizing health benefits.

Recognition by Congress and by concerned citizens and professionals of a deteriorating physical environment is not new. Today's widespread public concern for the cumulative effects of all environmental hazards on man are providing a renewed impetus for sincere action.

Deterioration of the physical environment has been associated with the phenomena of pollution - the addition of man made substances to the natural environment to a degree which is unsupportable by nature. The ability of the environment to dispose of these contaminants by the natural

processes of aereation, decomposition, radiation, and filtration depend on the type and quantity of the material. When the volume of waste is too great or when there are chemicals or other materials which cannot be altered by natural process, the air, water, or land becomes polluted (contaminated).

The pollution is rapidly escalating. A growing population, increasingly concentrated in response to economic and cultural attractions; a mounting use of natural resources by this population for food, clothing, employment, and relaxation; a rising standard of living; and an exploding technology with its contaminant production of new products are the trends of the times. These trends have resulted in new and more abundant patterns of living for many Americans which few would be willing to give up. They are also producing pollution of such quantity and kind as to threaten the life styles - if not the lives - of all people. Those most affected are the ones trapped in a particular locale: the poor in their ghettos isolated by affluent sprawl, and wildlife in their once isolated homes being encroached upon by the same sprawl.

In recent years there has been response to environmental crises but generally on a categorical or restricted basis, i.e., response to a threat to a particular natural resource, such as water, or to the effect of a particular waste product such as non-degradable detergents or pesticides on the environment. There are now extensive Federal, State, and local programs in such environmental areas as housing, water pollution, air pollution, solid waste, land reclamation and restoration, pesticide surveillance, water supply, and radiation protection. These are conceived and generally operated as isolated programs within different agencies, each with its own particular mission.

Americans seem suddenly to have awakened to the totality of what is happening to their environment: Not just the dirty air or water but the additives to food, the destruction of ecological balance in nature, radiation, lead paint, traffic congestion, noise, dying cities, visual blight, and so on. The new crisis is not related directly to any single set of cause-effect relationships, but rather to the threat of their synergistic impact on both the 'quality of life' and ultimately on the survival of man and other species. The crisis has brought a demand for action programs to improve the quality of life. At the same time, many of the current discussions of possible solutions involve the need to develop new attitudes respectful to the environment - *an environmental ethic*. The single-minded pursuit of growth is now being questioned and there is increasing interest in the environmental consequences of all decisions by individuals, government, and industry.³

It has now been stated that "the environment we have created may now be a major cause of death in the United States." Cancer, heart and lung disease "linked by growing evidence of environmental causes have become the leading cause of mortality in our society"⁴ (60 percent of all deaths in Missouri in 1976).

Through technical expertise and technological advancement, we have been able to pinpoint many environmental stresses. However, our health system has traditionally been concerned with care after the fact, and not with detection of cause and adequate prevention. Dr. Carl Marienfield, former Director of Missouri's Environmental Surveillance Center, has stated that, "the emphasis of the present health care system is the diseased patient. The only direct allusion to a concern with health is the aim of the medical care delivery system to get the patient back to a healthy condition by making services more available, accessible, appropriate, less costly, etc. How health is maintained and how one keeps the individual from becoming a 'patient' who needs care by virtue of having been exposed to unhealthy environmental stress is hardly addressed."⁵ He further stated that, "If we continue to devote our full attention to reacting to medical crises, we shall never reach a point in which the crises can be diminished through planned environmental management."⁶

A report entitled "Progress and Challenges in Health and Health Care in Missouri" concluded that increasing health expenditures in Missouri in the last ten years have not had the same impact (on health status) that past medical advances had shown. "Our dependence on medical technology, as it is made operational through expensive equipment, may be near the point of diminishing returns. In planning for the future, social, environmental, and behavioral interventions must be given more emphasis."⁷

1. Environment and Cancer

The collection of diseases called "cancer" strikes all ages and races of people and most animal species. Cancers have probably taken lives since man evolved. However, within the 20th Century, cancer has become far more prevalent than ever before.⁸ In the United States alone, where the death toll of infectious diseases has fallen drastically, cancer now accounts for one of every five deaths. In Missouri, only heart disease kills more people (see Health Status).

Insidious and most often fatal cancer evokes terror in most people. Years of research and billions of dollars spent have greatly increased man's knowledge of cancer but have failed to "reveal its essence."⁹ Techniques for saving or prolonging life through cancer detection have had some success (e.g., surgical, chemical, and radiological therapies) but most types of malignancies cannot now be cured. Experience and study have shown that cancer, like virtually all diseases, is primarily the end product of interactions between an organism and the environment. Although disagreement is found among cancer researchers, it has been estimated that between 70 and 90 percent of human cancers are induced by environmental factors - thus potentially preventable. Cancer rates are influenced greatly by cigarette smoking, diet, and alcohol consumption; contaminants in air, water, food, and soil; toxic chemicals in workplaces; and exposure to sunlight and ionizing and non-ionizing radiation.

"Current cancer rates reflect both the persistence of traditional cultural habits that promote cancer, and the spread of new carcinogens and cancer promoting habits in recent decades. During the last half century, tremendous changes in living and eating habits have affected most of the world's people, and tens of thousands of chemical compounds - many of which are synthetic and few of which have been thoroughly tested for possible carcinogens, mutagenic or other harmful effects - have been introduced into the environment. Approximately one thousand *new* chemicals go into production each year in the U.S. Over the coming decades, our bodies will provide clues as to how many slow-acting carcinogens have been unleashed in the name of progress. An acceleration of cancers upward climb may well be in store."¹⁰

Cancers are typified by the unrestrained proliferation of body cells. When runaway cell growth remains within a localized area it usually constitutes a benign tumor. Most malignant tumors or cancers, have the capacity to spread, eventually invading distant body parts through the bloodstream and lymphatic system. Just what causes this cell growth to go wild remains a mystery. Certain influences such as radiation, tobacco smoke, or asbestos promote cancer growth, however, the 'real' mechanism remains hidden. Genetic makeup also influences the development of cancer. Overall heredity appears far less a factor than environment in explaining broad patterns of cancer genesis.

Current understanding of the means by which substances induce cancer may eventually shed light on a particular prevention strategy. Noncarcinogenic 'poisons' usually stop damaging cells as soon as exposure is ended. If the poisoned individual survives the exposure, healthy cells will

eventually replace the old ones. However, carcinogenic agents appear to affect cells irreversibly. Contacts with carcinogens even if separated by frequent or long intervals can have an additive effect, thus greatly increasing cancer probability.

By far the largest single proven cause of cancer is cigarette smoke. Because of the popularity of cigarettes in the twentieth century, lung cancer is increasing in prevalence. (Although rare at the turn of the century, smoking related cancers now lead all other cancers in the U.S. as a cause of death.) Even more important, the overall upward trend in total cancer deaths largely reflects rising lung cancer mortality. A smoking habit combined with exposure to asbestos, radiation or other contaminants undoubtedly increases cancer incidence and may increase by ten fold the risk of dying from lung cancer.

A second major area of cancer involves diet. "Although there is little research available, dietary factors may outstrip even tobacco as a contributor to cancer."¹¹ Links between diet and cancer are often thought of only in terms of chemical additives. These synthetics do pose a problem, however, extensive research is showing that other more subtle factors may exert a heavier influence. The degree to which foods are processed, the amount of fat in the diet, food storage methods, lack of trace elements, and the type of food preparation method are all thought to exert some influence on cancer rates. Excessive alcohol consumption is another major dietary influence found to promote cancer genesis. Human disease patterns and results of experiments on animals appear to show that alcohol itself is seldom the cause of a cancer, but rather enhances the carcinogenic effects of other substances.

Ultraviolet radiation in sunlight also contributes greatly to cancer. In the U.S., skin cancer is so common and readily treated that it is often ignored. However, the 300,000 cases reported in the U.S. equal all other malignancies combined.

Even more potent than solar radiation is ionizing radiation, the type of radiation found in nuclear reactions, nuclear power plants, and medical x-rays. Many studies have established that ionizing radiation causes cancer and mutation. However, the precise danger involved in exposure to a particular dosage of radiation and the hazards attending long term exposure to low level radiation are unknown. Due to the unknown harmful effects versus benefits of exposure to medical x-rays, exposure has to be balanced with long term risks. A World Health Organization Expert Committee stated as long ago as 1964 that there was a "need for massive reduction of medical doses of radiation." Yet, we know that medical exposures often exceed the necessary minimum. In fact, many x-rays are routinely ordered for the sole purpose of providing a record for the medical facility in case of a law suit.

Producing electricity with nuclear power has added a new source of ionizing radiation. As presently envisioned, many electrical generating nuclear plants are being proposed worldwide with an accompanying system of reprocessing plants and transportation networks to process fuels and wastes. However, as the uranium supply dwindles, it is highly likely

that "breeder" reactors will begin to be constructed. Plutonium, the fuel that feeds this type of reactor, and in the process creates more fuel than it consumes, is one of the deadliest substances known to man. With a half life of hundreds of thousands of years, plutonium remains hazardous far beyond our capabilities to conceptualize.

In the absence of human or mechanical errors, the day to day operations of a nuclear power system - including uranium mining, power plant operations, nuclear fuel reprocessing and transporting, and storing of radioactive fuels and wastes - involves leakage of various radioactive materials into the environment. If all the planned nuclear generating stations were to be brought on line, "planned" pollution could cause an as yet undetermined number of added cancer deaths and mutations annually. The number affected would depend on the amount and type of material released.¹²

Transporting and storing radioactive wastes also presents its own health problems. Uncontrolled dumping of radioactive wastes, inaccountability, and sometimes haphazard enforcement of transportation regulations should not be lightly dismissed. Benign energy sources (solar) appear to pose fewer direct health hazards and should be evaluated in light of the potential dangers of nuclear power.

Cancer promoting drugs and carcinogenic industrial chemicals comprise other potential cancer sources where production and use cannot be controlled by individuals. "Asbestos in insulation, arsenic in the air, chloroform in the water, PCB's in mother's milk, vinyl chloride in factories and their effluents - the list of recent 'revelations' lengthens weekly."¹³ Many people now recoil at the thought of a familiar substance being placed on another cancer list. However, society has been paying high costs for the negative health effects of many of these environmentally induced cancers. Only now are we learning what we have actually been paying in health costs. A study by the Environmental Protection Agency in cooperation with DHEW found that "costs to society of cancer alone are estimated at \$11 billion per year, of which 70 to 90 percent may be pollution related."¹⁴

Current Status

Dr. Richard Loepky and the Ad Hoc Committee on Environmental Carcinogenesis have succinctly described the current situation in Missouri.¹⁵ The recommendations of their Committee and other interested groups and professional organizations in the state in regards to what should be done to improve our capabilities for deterring environmentally induced cancers and preventing them, center around a three-pronged approach:

1. There is a "profound" deficit of usable epidemiological data in the State of Missouri. In order to address environmental carcinogenesis precise knowledge of the frequencies of various cancers, where they are geographically located, and the characteristics of individual victims is.

needed. The present reporting system is woefully inadequate and provides a simplistic and unrealistic view of the cancer problem. Missouri needs to support and develop a truly "population based" Cancer Registry which collects data on every cancer case in Missouri. The proposed central registry would collect data restricted exclusively to malignant neoplasms and certain benign tumors and lesions considered premalignant.

2. There is a lack of analytical chemistry laboratory facilities for analysis of carcinogenic chemicals. Proper equipment exists in only a few scattered laboratories throughout the state and in addition these laboratories are being used to near capacity. Coordination of present cancer research and findings in Missouri, and the addition of proper facilities to perform this detection and research is badly needed.
3. There are many misconceptions about cancer and its link to the environment. If cancer prevention is to be accomplished, people will have to be informed in regard to carcinogenic hazards and "appropriate avoidance measures." A cancer and environment clearinghouse has been established in other states. No such vehicle exists here in Missouri. Present health education activities are spread among the Department of Elementary and Secondary Education, Missouri Division of Health, and various other state agencies. The establishment of an "environmental carcinogenesis public education and information program" and clearinghouse to develop educational packages and to provide information regarding cancer in general would go a long way to solving the information gap between the informed and uninformed in Missouri.

Conclusions

The link between environmental degradation, human health, and the introduction of hazardous substances into the environment, has been clearly proven. The exact relationship, however, between the type and severity of diseases and their origins are in many cases unknown. This is a serious deficiency given that cancer is the second leading cause of death in Missouri, with lung cancer being the greatest killer. The environmental origins of cancer including smoking, diet, ultraviolet radiation, nuclear radiation, and carcinogenic chemicals indicates that much of the incidence of cancer is potentially preventable. In Missouri, the three areas in cancer prevention which have the highest priority are the development of a cancer registry to produce usable epidemiological data for Missouri, increased capacity for analysis of carcinogenic materials, and an improved public educational program in the area of environmental causes of cancer.

Goals, Objectives, and Actions

GOAL: BY 1980, CANCER SHOULD BE ESTABLISHED AS A REPORTABLE DISEASE THROUGH ENABLING LEGISLATION.

GOAL: BY 1981, A MANDATORY CENTRAL CANCER REGISTRY SHOULD BE ESTABLISHED FOR THE STATE OF MISSOURI.

(This central registry would collect data restricted exclusively to malignant neoplasms and certain benign tumors and lesions considered premalignant. By completely covering the state, the central registry, through input by hospital and community based registers, would have the capability of supplying population-based information about the epidemiological aspects of cancer.)

GOAL: BY 1981, APPROPRIATE** FACILITIES FOR THE IDENTIFICATION AND STUDY OF SUSPECTED CARCINOGENS SHOULD BE ESTABLISHED IN MISSOURI.

GOAL: BY 1981, INFORMATION AND EDUCATION SERVICES (E.G., CANCER AND ITS ENVIRONMENTAL LINK) RELATED TO ENVIRONMENTAL HEALTH SHOULD BE AVAILABLE TO THE RESIDENTS OF MISSOURI THROUGH A MANDATED SCHOOL HEALTH EDUCATION PROGRAM (SEE SCHOOL HEALTH EDUCATION), THROUGH THE EXTENSION EDUCATION PROGRAMS OF THE UNIVERSITY, AND THROUGH THE ONGOING HEALTH EDUCATION PROGRAM OF THE MISSOURI DIVISION OF HEALTH.

**Computerized gas chromatograph and mass spectrometer system.

2. Environmental Quality

A considerable number of environmental substances are thought to affect human health. These substances and their related effects are illustrated in Table 3.3-2. Effects are classified as "definite" or "possible". Each exposure does not necessarily produce the effects described nor have some other effects been established. This listing is not quantified as to the dose-response relationship.

Table 3.3-2
Definite and Possible Health Effects of Environmental
Pollutants and Exposures

[Items in parentheses refer to effects other than those directly affecting human health status]

Agent, pollutant, or source	Definite effect	Possible effect
COMMUNITY AIR POLLUTION--A		
Sulfur dioxide (effects of sulfur oxides may be due to sulfur, sulfur trioxide, sulfuric acid, or sulfate salts)	1. Aggravation of asthma and chronic bronchitis 2. Impairment of pulmonary function 3. Sensory irritation	
Sulfur oxides and particulate matter from combustion sources	4. Short-term increase in mortality 5. Short-term increase in morbidity 6. Aggravation of bronchitis and cardiovascular disease 7. Contributory role in etiology of chronic bronchitis and emphysema 8. Contributory role to respiratory disease in children	9. Contributory role in etiology of lung cancer 10. Increase in chronic respiratory disease
Particulate matter (not otherwise specified)	11. Aggravates emphysema, asthma, and bronchitis 12. Impairs lung function in patients with bronchitis-emphysema 13. Eye and respiratory irritation and impairment in performance of student athletes	14. Increased probability of motor-vehicle accidents
Oxidants		15. Acceleration of aging, possibly due to lipid peroxidation and related processes
Ozone	15. Impairs lung function	
Carbon monoxide	17. Impairs exercise tolerance in patients with cardiovascular disease	18. Increased general mortality and coronary mortality rates 19. Impairment of central nervous system function 20. Causal factor in atherosclerosis 21. Factor in pulmonary emphysema 22. Impairment of lung defenses such as mast cells and macrophages or altered lung function
Nitrogen dioxide		24. Impairment of hemoglobin and porphyrin synthesis
Lead	23. Increased storage in body	27. Headache, nausea, and sinus affections
Hydrogen sulfide	25. Increased mortality from acute exposures 26. Causes sensory irritation	30. Contributes to chronic pulmonary disease (asbestos and lung cancer)
Mercaptans		34. Headache and sinus affections
Asbestos	28. Produces pleural calcification 29. Malignant mesothelioma, asbestosis	
Organophosphorus pesticides	31. Acute fatal poisoning 32. Acute illness 33. Impaired cholinesterase activity	
Other odorous compounds		
Beryllium	35. Berylliosis with pulmonary impairment	
Airborne microorganisms	36. Airborne infections	
FOOD AND WATER CONTAMINANTS--B		
Bacteria	1. Epidemic and endemic gastrointestinal infections (typhoid, cholera, shigellosis, salmonellosis, leptospirosis, etc.)	2. Secondary interaction with malnutrition and with nitrates in water (cf., no. 15)
Viruses	3. Epidemic hepatitis and other viral infections	4. Eye and skin inflammation from swimming
Protozoa and metazoa	5. Amoebiasis, schistosomiasis, hydatidosis and other parasitic infections	
Metals	6. Lead poisoning 7. Mercury poisoning (through food chains) 8. Cadmium poisoning (through food chains) 9. Arsenic poisoning 10. Chromium poisoning	11. Epidemic nephropathy 12. "Blackfoot" disease
Nitrates	13. Methemoglobinemia (with bacterial interactions)	14. Increase in cardiovascular disease
"Softness" factor		
Sulfates and/or phosphates	15. Gastrointestinal hypermotility	
Fluorides	16. Fluorosis of teeth when in excess	

Source: Department of Health, Education, and Welfare, Report of the Technical Panel to the U.S. National Committee on Vital and Health Statistics, "Statistics Needed for Determining the Effects of the Environment on Health," 1977.

Table 3.3-2
(Continued)

[Items in parentheses refer to effects other than those directly affecting human health status]

Agent, pollutant, or source	Definite effect	Possible effect	
LAND POLLUTION—C			
Human excreta	1. Schistosomiasis, taeniasis hookworm, and other infections	2. Typhus, plague, leptospirosis, and other infectious diseases	
Sewage			
Industrial and radioactive waste	3. Storage and effects from toxic metals and other substances through food chains		
Pesticides—lead arsenate	4. Increased storage of heavy metals in smokers of tobacco grown on treated areas		
THERMAL EXPOSURES—D			
Cold damp	1. Excess mortality from respiratory disease and fatal exposure	2. Contributes to excess mortality and morbidity from other causes	
	3. Excess morbidity from respiratory and related diseases and morbidity from exposure	4. Rheumatism	
Cold dry	5. Mortality from frostbite and exposure	6. Impaired lung function	
	7. Morbidity from frostbite and respiratory disease		
Hot dry	8. Heatstroke mortality		
	9. Excess mortality attributed to other causes		
	10. Morbidity from heatstroke and from other causes		
	11. Impaired function; aggravation of renal and circulatory diseases		
Hot damp	12. Increase in skin affections	13. Increase in prevalence of infectious agents and vectors	
	14. Heat-exhaustion mortality		
	15. Excess mortality from other causes		
	16. Heat-related morbidity		
	17. Impaired vigor and circulatory function		
	18. Aggravation of renal and circulatory disease		
RADIATION AND MICROWAVES—E			
Natural sunlight	1. Fatalities from acute exposure		5. Increase in malignant melanoma
	2. Morbidity due to "burn"		
	3. Skin cancer		
	4. Interaction with drugs in susceptible individuals		
Diagnostic X-ray	6. Skin cancer and other skin changes	7. Contributing factors to leukemia	
		8. Alteration in fecundity	
Therapeutic radiation	9. Skin cancer	11. Increase in other cancers	
	10. Increase in leukemia		
Industrial uses of radiation and mining of radioactive ores	14. Acute accidental deaths	12. Acceleration of aging	
	15. Radiation morbidity	13. Mutagenesis	
	16. Uranium nephritis		
	17. Lung cancer in cigarette-smoking miners	18. Increase in adjacent community morbidity or mortality	
Nuclear power and reprocessing plants			
		19. Increase in cancer incidence	
		20. Community disaster	
		21. Alteration in human genetic material	
Microwaves		22. Tissue damage	
NOISE AND VIBRATIONS—F			
Traffic	2. Permanent hearing loss	1. Progressive hearing loss	
Aircraft (including sonic boom)			
		3. Aggravation or cause of mental illness	
Vibrations		4. Articular and muscular disease	
		5. Adverse effects on nervous system	

Source: Department of Health, Education, and Welfare, Report of the Technical Panel to the U.S. National Committee on Vital and Health Statistics, "Statistics Needed for Determining the Effects of the Environment on Health," 1977.

Table 3.3-2
(Continued)

[Items in parentheses refer to effects other than those directly affecting human health status]

Agent, pollutant, or source	Definite effect	Possible effect
HOUSING AND HOUSEHOLD AGENTS—G		
Heating, cooking, and refrigeration	1. Acute fatalities from carbon monoxide, fires and explosions, and discarded refrigerators	2. Increase in diseases of the respiratory tract in infants
Fumes and dust	3. Acute illness from fumes 4. Aggravation of asthma	5. Increase in chronic respiratory disease
Crowding	6. Spread of acute and contribution to chronic disease morbidity and mortality	
Structural factors (including electrical wiring, stoves, and thin walls)	7. Accidental fatality 8. Accidental injury 9. Morbidity and mortality from lack of protection from heat or cold 10. Morbidity and mortality due to fire or explosion	
Paints and solvents	11. Childhood lead-poisoning fatalities, associated mental impairment, and anemia 12. Renal and hepatic toxicity 13. Fatalities	
Household equipment and supplies (including pesticides)	14. Fatalities from fire and injury 15. Morbidity from fire and injury 16. Fatalities from poisoning 17. Morbidity from poisoning	
Toys, beads, and painted objects	18. Mortality and morbidity	
Urban design	19. Increased accident risks	20. Contribution to mental illness

Source: Department of Health, Education, and Welfare, Report of the Technical Panel to the U.S. National Committee on Vital and Health Statistics, "Statistics Needed for Determining the Effects of the Environment on Health," 1977.

a. Water Quality

Water is an essential element in the realm of natural systems which support human life and is a universal influence on human health.

Historically, water pollution problems come from "point sources" or pipes. As water pollution from "point" sources decreased, the impact of "non-point" sources became more evident. "Non-Point" sources include drainage from agricultural lands and storm water from streets and sediments. Both "Point" and "Non-Point" pollution sources are being dealt with through the "208 Program" (Areawide Waste Treatment Management Planning Program) administered by the Division of Environmental Quality of the Department of Natural Resources.

Potential threats to human health, more acute than the traditional water pollution problems, are those posed by chemical contaminants many of which pass through present day waste water treatment plans essentially unchanged. Some, such as lead, radioactive chemicals, and poly-vinyl chlorides have cumulative long term deleterious effects related to elevated rates of cancer. As industries and manufacturers expand, there is a corresponding growth in the complexity of chemical wastes entering rivers, lakes, and underground aquifers. Increased use of water for recreation and food production has resulted in even greater exposure to possible harmful contaminants. Conversely, certain substances found in water, such as fluoride, as well as high levels of water hardness have a decidedly beneficial effect on human health.¹⁶

Generally speaking, current water quality problems are based on the following:

1. "Point" pollution discharges of toxic chemicals from industrial and commercial concerns;
2. "Non-Point" contaminants from agricultural operations and other activities; and
3. Human sewage from both public and private treatment systems.

Improvement in water quality must focus on assuring the quality of public and private drinking water supplies, the suitability of waters in the state for recreational uses which include swimming, fishing, and boating, and the edibility of wildlife taken as food.

Current System

At the state level, Missouri's Department of Natural Resources (DNR) has jurisdiction over the quality of water in streams and lakes. The overall goal is to make all state waters drinkable, swimable, and fishable and prevent their degradation. DNR develops annual plans relating to the assessment of water quality, geological evaluations, and water pollution control activities. DNR also administers the National Pollution

Discharge Elimination System (NPDES) to manage industrial contamination from point 'sources'. Control of toxic chemicals, like PCB's often come through the NPDES program. To monitor the progress of anti-pollution efforts, DNR monitors water quality all around the state.

The Missouri Division of Health has jurisdiction over all private drinking water supplies. It also monitors the quality of water used by public water utilities. The State codes also contain regulations pertaining to the construction of private subsurface disposal. Permits are issued at the local level with on site inspection of well and septic system sites performed by local health departments.

Conclusions

Drinking water is a direct and universal environmental influence on human health. In Missouri, the spread of infectious disease from water-borne contaminants is well under control. However, water quality must continue to be maintained and improved. The 1972 Federal Water Pollution Control Act succinctly summarizes the need "to restore and maintain the chemical, physical, and biological integrity of the nations water."

Goals, Objectives, and Actions

GOAL: ALL RIVERS, STREAMS, LAKES, AND UNDERGROUND WATERS IN MISSOURI SHOULD BE FREE OF CONCENTRATIONS OF POLLUTANTS WHICH ARE HAZARDOUS TO HUMAN HEALTH, DAMAGING TO AQUATIC LIFE, OR DETRIMENTAL TO RECREATIONAL USE (BASED ON ACCEPTABLE HEALTH AND ENVIRONMENTAL STANDARDS).

GOAL: ALL DRINKING WATER IN MISSOURI, WHETHER PUBLIC OR PRIVATE, SHOULD BE OF HIGH QUALITY AND MEET OR EXCEED ALL HEALTH STANDARDS RELATED TO BIOLOGICAL, CHEMICAL, AND RADIOLOGICAL SUBSTANCES.

b. Air Quality

The natural air supply which envelopes the Earth is essential to man in a number of respects. It is the life-supporting media in which man lives and it is required in the combustion of fossil fuel used for heat and power. In addition, it is used in manufacturing processes and service activities, such as chemical and biological oxidation processes, air cooling and spray painting.

The air supply is limited in quantity and must be reused. In the course of natural and artificial ventilation processes, the used air, along with any waste products, mixes with the surrounding ambient air which is thereby contaminated. Many of the waste products in the air are damaging, both to man directly and to the various elements of his natural and man-made environment. Fortunately, this polluted air is subject to natural cleansing and rejuvenating systems. However, when these systems become overloaded and when the tolerance of man and the elements of his environment to the resulting insults is exceeded, then man must either suffer the consequences or initiate action to prevent the resulting damages and losses.

Historically, man has attempted to initiate action against fouling the air. Air pollution controls have been carried out from time to time and to various levels of sophistication for literally hundreds of years.

Experience has shown that air pollution is a regional problem. County-wide, multi-county, and often multi-state programs have been established in various parts of the country in recognition of this fact. It was also found that mounting an effective air quality management or control program is complex, difficult, and expensive. It involves major considerations and actions in not only the technological field but also the sociological, economic, political, and legal arenas. Nevertheless, air pollution control programs must be carried out in order to promote man's total health and to preserve his environment.

Despite the increased efforts in the 1970's to control air pollution, the best that can be said is that we have barely been able to hold the line. Each year there are more automobiles, more power-generating facilities, more new chemical compounds, more manufacturing plants, more use of fertilizers and pesticides -- all resulting in more sources of atmospheric emissions.

Air pollution causes health effects. It is considered to be a major factor in respiratory ailments such as lung cancer, emphysema, chronic bronchitis, and common colds. It appears to be a factor in heart disease and abnormal human behavior and it causes eye irritation.

Air pollution causes economic loss due to damage to vegetation, animals, materials, and visibility. It reduces the productivity of vegetable plants and fruit trees and reduces the salability of fruits, flowers, and vegetables. It adversely affects the normal growth and

function of cattle. It damages paint and erodes metals, masonry, and art sculptures. It fades and deteriorates fabrics, and damages the connections and switches of electrical and electronic systems. It reduces visibility and thus spoils or obliterates vistas, and causes airplane and vehicular accidents. Air pollution causes an untold economic loss to individuals, families, communities, and the nation due to the damage to human health.¹⁷

Research in the area of pollution has identified many of the cause/effect relationships, some of the resulting costs, and many methods of identification and control of the causative pollutants. Efforts will continue indefinitely to expand and refine our knowledge in these areas.

Air pollutants are in the form of solid and liquid particulates and gases. They occur in the air in varying particle sizes, concentrations and combinations, and problems may result from very short to very long exposure times, depending upon the nature of the pollutant and the sensitivity of the receptor. Odor problems, for example, occur almost instantaneously when a very low (parts-per-billion) concentration of a single gaseous pollutant comes in contact with the human nose, while noticeable damage to a stone sculpture may require years of exposure to relatively high concentrations of sulfur dioxide, particulates, and humidity.

Significant problems for a small area may be limited to those caused by the emissions from a single "point" source, such as a smelter, power plant, paper mill, or chemical manufacturing plant. For regional areas with an urban core, however, the air pollution problem is more likely caused by the emissions from a large number of sources, both stationary and mobile. Identification and quantification of the problems requires an engineering evaluation of the pollutant source-receptor system of the area, considering such factors as the nature and location of pollutant sources, quantities of source emissions, topography, meteorology, and measured and predicted levels of air quality.

The Clean Air Act Amendments of 1970 directed the Department of Health, Education, and Welfare (later the Environmental Protection Agency) to establish National Ambient Air Quality Standards (NAAQS) for "criteria" pollutants -- those whose health effects had been examined in so-called "criteria documents." NAAQS were set for six pollutants: sulfur oxides, particulate matter, carbon monoxide, photochemical oxidants, hydrocarbons, and nitrogen oxides. Two kinds of NAAQS could be established: primary standards, set to protect the public health with an adequate margin of safety; and secondary standards, set to protect the public welfare (protection of materials and crops, etc.). Only some of the six criteria pollutants have secondary standards; they all have primary standards.

The Amendments of 1970 called for the primary standards to be achieved no later than 1977. Subsequent amendments passed in 1977 extend this deadline until 1982 and allow states to request extensions until 1987 to meet standards for photochemical oxidants and carbon monoxide. In addition,

EPA is proposing that the standard for photochemical oxidants, currently .08 parts per million, be increased to .10 parts per million.

The Clean Air Act Amendments of 1977 will have a substantial impact on the economies of cities large and small, whether they are located in areas that have relatively clean air or those that have dirty air. Programs that encourage urban economic growth, particularly in distressed cities with dirty air, will have to be carefully adapted to the clean air requirements if disruption of economic revitalization efforts is to be avoided. A case in point is the St. Louis metropolitan area.

Congress also enacted specific provisions in 1977 "to protect and enhance" air quality in clean air areas and to prevent it from deteriorating to the minimum health standards. (Areas that have air cleaner than national minimum standards are considered clean air regions.) By placing a ceiling on overall pollution increases and requiring best available control technology on new industry, the provision will guide economic development in clean areas and prevent the flight of industry from dirty air to clean air areas to avoid compliance.

Transportation-Related Air Pollutants

There are six transportation-related air pollutants for which there are National Ambient Air Quality Standards (NAAQS): carbon monoxide, photochemical oxidants, hydrocarbons, nitrogen oxides, particulate matter, and lead. Carbon monoxide, a localized pollutant, is found in quantities higher than the NAAQS in most areas which have congested traffic, though the state has monitored relatively few sites except in St. Louis. Carbon monoxide reduces circulating levels of oxygen in the bloodstream, thus stressing the circulatory system and depriving the brain of oxygen. Photochemical oxidants, a region-wide pollutant, are formed by the chemical reaction of hydrocarbons and nitrogen oxides in the presence of sunlight (hence the name photochemical).

The State has occasionally measured quantities of photochemical oxidants greatly in excess of the NAAQS. The standard is exceeded regularly during warm, sunny weather. Oxidants aggravate pre-existing respiratory conditions, and the high levels experienced in Missouri can affect healthy people as well. Nitrogen oxides also affect health by lowering resistance to infection. EPA is considering setting short-term NAAQS for nitrogen oxides. Hydrocarbons are not measured in the state.

The photochemical oxidant problem is one which affects most large urban areas; emissions from St. Louis affect East St. Louis, and emissions from Illinois affect Indiana and so on. Coordination and clean-up efforts by many states will be necessary, and the federal government must take the lead in bringing about regional solutions.

Stationary Sources

Levels of sulfur oxides and particulate matter, the major industrial pollutants, were reduced in the 1960's and mid-1970's due to control strategies implemented by the state. The health impact of particulate matter depends upon its chemical makeup. Small particle can be inspired deep into the lungs and can impact the health of lung tissue. Such particles may carry damaging chemicals, such as sulfur oxides, on them. Sulfur oxides irritate the respiratory tract, and other sulfur compounds can significantly damage the respiratory system.

Although there is no NAAQS for sulfates, this class of pollutant, which consists of sulfur oxide-particulate matter complexes, has increasingly become recognized as a very hazardous one. Because particulate matter can be carried hundreds or thousands of miles by prevailing winds, sulfates produced in other states may seriously impact health in Missouri.

Non-Criteria Air Pollutants

There are numerous harmful air pollutants for which EPA has set NAAQS or is just now establishing standards. Three of particular concern are sulfates, lead, and asbestos.

Sulfates

As described previously, sulfates are a combination of particulate matter and sulfur oxides. Because the sulfur oxide is dissolved on particulate matter, it can be carried deep into the lung, where it damages respiratory tissues. Sulfates are transported long distances. The State of California has set an ambient sulfate standard.

Lead

Lead is a metallic element emitted by some industry and in auto exhaust (due to lead in gasoline). Although the health impact of airborne lead is still not totally defined, its impact on young children is especially deleterious. In September, 1978, EPA promulgated an ambient air standard (1.5 ug/m^3) for lead. It is probable that a number of towns in the State will be found in violation.

Asbestos

Asbestos is a class of mineral compounds which causes a number of lung diseases, including cancer. It is emitted by industry, by construction and demolition of buildings which contain asbestos materials, and by wearing down of brake and clutch linings in automobiles. Although EPA has set some emission standards, it has set no ambient standards.

Indoor Air Quality

Air pollution control efforts to date have generally been directed at the outdoor environment. However, most people spend the majority of their time indoors, in their homes, at their offices, and at restaurants, theaters, stores, etc. Many of these indoor environments have closed circulation systems, with periodic air intake. While acknowledging widespread concern about the effects of cigarette smoke on both smokers and non-smokers, there is a need to work for development and passage of an Indoor Clean Air Act for the State of Missouri.

Current System

Missouri's air quality is improving in almost every area in the state now meeting the national primary air quality standards which were designed to protect public health. This clearer air protects public health and enhances Missouri's natural beauty.

Missouri's legislature officially recognized the importance of clean air in 1965 with the passage of the Air Conservation Law. The law established the Air Conservation Commission as the state agency to prevent, abate, and control air pollution by practical and economically feasible methods. With state government reorganization in 1974, the commission and its staff was placed within the Missouri Department of Natural Resources (DNR). Both the commission and DNR staff members are committed to eliminating violations of the national primary standards by 1980.¹⁸

In carrying out its purpose, the commission and staff currently are concerned with the two major metropolitan areas where people, traffic, and industry are concentrated. In the Kansas City area, the commission and staff are considering control strategies for the excessive particulates. Much particulate matter in this area probably is resuspended by human, especially vehicle, activity.

In St. Louis, attention is focused on "hot-spot" areas where industry is concentrated and where the national standards for particulates and sulfur dioxide are not met. (Although the area's individual emission sources meet the state's air pollution control regulations, all the sources together contribute excessive emissions.)

In order to reduce the excessive carbon monoxide and photochemical oxidants in St. Louis, the commission has approved a transportation control plan which includes a regulation to control the emission of evaporative hydrocarbons such as gasoline, from storage, loading, and transfer at bulk terminals and service stations. Controlling these reactive hydrocarbons will reduce the level of photochemical oxidants by approximately five percent.

To control the carbon monoxide emissions from automobiles, the commission and staff plan to develop an inspection/maintenance (I/M) program as part of the annual safety program for the St. Louis metropolitan

area. The transportation control plan also may include increased emphasis on techniques to reduce emissions such as car pooling, reserving highway lanes for buses and car pools, developing a more efficient mass transit system, decreasing the supply of parking space to encourage fewer vehicles and better use of mass transit, and improving traffic flow by synchronizing traffic lights to insure a steadier flow. The state legislature will be involved with controlling the automobile-related pollutants. As the law now reads, the commission does not have the statutory authority to control indirect pollution sources such as highways or parking lots. Legislative authority will be needed to implement these parts of the federally-required transportation control plan.

It is the Air Conservation Commission's responsibility to adopt, amend, and repeal the state's air pollution control regulations. The existing regulations for outstate Missouri encompass various aspects of air pollution: automobile emissions, odors, sulfur compounds, fugitive dust, open burning, industries, power plants, incinerators, air pollution episodes, and new source performance standards.

DNR's air quality and laboratory services program has the responsibility of carrying out the commission policies and enforcing the regulations. There are three sections within the air quality program: enforcement, engineering, and administration.

Enforcement personnel annually inspect and evaluate 164 major sources, that is, those sources capable of emitting more than 100 tons/year of air pollutants. Seventeen hundred identified stationary sources also must be evaluated regularly for compliance. In addition, a high priority is given to citizens' complaints.

The engineering section handles construction permits, sales tax exemptions, computer work, and engineering studies. This section also drafts the proposed regulations for the commission's consideration. The federally-required transportation control plan for the St. Louis area and plans for the non-attainment areas in St. Louis and Kansas City are the responsibility of this section.

DNR's laboratory services program is responsible for determining air quality. Laboratory personnel establish, operate, and maintain air sampling stations. Air samples routinely are analyzed for fluorides, ozone, sulfur dioxide, nitrogen dioxide, oxidants, carbon monoxide, hydrocarbons, suspended particulates, and sulfur trioxide. Two continuous air monitoring trailers are being operated in North Kansas City and St. Charles. In addition, a mobile sampling van allows the staff to monitor areas where a permanent sampling site is not possible.

Conclusions

Efforts to control air pollution have focused first on protecting human health in urban and industrial areas. Secondary efforts have centered on protecting plants, animals, and materials and in improving visibility in the urban environment. Many biological, physical, and

chemical reactions to air pollution have been documented and analyzed. Pollution of the air we breathe has also been found to combine synergistically with other negative health habits to increase the rate of cancer incidence. It becomes reasonably apparent upon analysis that air pollution control to protect health may alleviate other related social and health problems.

Goals, Objectives, and Actions

GOAL: BY 1987, THE NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) FOR CARBON MONOXIDE AND PHOTOCHEMICAL OXIDANTS SHOULD BE ATTAINED AND MAINTAINED IN MISSOURI, WITH SUBSTANTIAL REDUCTIONS YEARLY AS REQUIRED BY THE CLEAN AIR ACT AMENDMENTS OF 1977.

GOAL: BY 1982, THE NATIONAL AMBIENT AIR QUALITY STANDARDS FOR PARTICULATE MATTER SHOULD BE ATTAINED AND MAINTAINED IN MISSOURI AS REQUIRED BY THE CLEAN AIR ACT AMENDMENT OF 1977.

GOAL: TO "PREVENT THE SIGNIFICANT DETERIORATION" OF SULFUR OXIDE AIR QUALITY IN MISSOURI.

GOAL: REDUCE THE AMBIENT AIR LEAD LEVELS TO THE NATIONAL STANDARD IN ALL AREAS OF MISSOURI.

GOAL: REDUCE AMBIENT AIR ASBESTOS EXPOSURE TO THE MINIMUM POSSIBLE LEVEL IN MISSOURI, WITH THE RECOGNITION THAT ASBESTOS (AS A CARCINOGEN) HAS NO ESTABLISHED "SAFE" LEVEL.

GOAL: TO ENSURE HEALTHFUL AIR FOR THE GENERAL PUBLIC IN THE INDOOR ENVIRONMENT IN MISSOURI.

OBJECTIVE 1: By 1981, work for passage of an Indoor Clean Air Act.

c. Solid Waste Management

The term "solid wastes" refers to those solid materials resulting from domestic, industrial, commercial, institutional, mining, and agricultural activities and from community activities (this includes wastewater treatment plants, water supply plants, and air pollution control facilities). Gaseous and liquid wastes are carried by the natural transport system of the air and water currents. Solid wastes themselves rarely mingle or disperse in the land mass and remain, sometimes indefinitely, at rest at the place of discard if not collected and transported by man.

The chief methods of disposal have been open dumping on land, ocean disposal, mulching, land spreading, animal feeding, incineration, and sanitary landfilling. Mulching, land spreading, and animal feeding are declining in use. Larger communities lean toward incineration because of lack of landfill sites or the need for long-distance hauling. Incineration, however, is not a complete disposal method and is costly, and, thus, many cities are seeking new techniques. Sanitary landfilling is on the increase. It has the merit of decreasing air and water pollution and unsightliness since refuse is compacted and covered over daily. It offers the possibility of better land use and land reclamation and need not depress property values. Because of information published by Federal, State, and local agencies as well as private equipment firms and nonprofit citizens' groups, the general public is beginning to understand that a sanitary landfill can be an appropriate method of disposing of solid wastes, superior to uncontrolled or open dumps. Previously thought of alternatives such as recycling and biomass conversion, may provide a better suited interdisciplinary approach to waste management.

The problems of solid wastes are those of urbanized, industrialized society. They can be summarized under eight major headings: 1) the sheer quantity of the wastes; 2) the unsatisfactory nature of present storage, collection, and disposal methods; 3) the menace of solid wastes to the health of individuals and communities; 4) the assault on the environment; 5) the indestructibility of many kinds of solid waste; 6) the expense of hauling them; 7) the political jurisdictions and social attitudes in the urban-suburban complex; and 8) the difficulty of gaining public support.

Public Health Service studies indicate that there is an association between poor solid waste practices and 22 human diseases.¹⁹ The rats and flies that infest dumps can and do carry disease throughout an area. The residues from burning dumps pollute the air and produce additional disease conditions. Chemicals from dumps enter water supplies and may add waterborne disease. These health hazards only occasionally result in the dramatic epidemics of previous centuries. Usually they represent slow, cumulative impairment to health and life, involving traces of chemicals, low-level radiation, air pollution, drug residues, etc. Workers in solid waste collection and disposal programs are three times as susceptible to disease and nine times as vulnerable to accident as the general population.²⁰

Less than 5 percent of community wastes in the U.S. are disposed of in a sanitary manner. Undocumented, but well-known, is the American's tendency to overfill garbage containers and strew paper sacks, pop bottles, cigarette boxes, etc., across the land. What this type of waste storage and disposal looks and smells like is only too well known. Dangers of air pollution and water pollution are inherent in these poor storage, collection, and disposal methods. However, there are also assaults on the home environment where communities either require the householder to haul solid wastes to a disposal site or arrange for collection of wastes on an infrequent basis.

Under the broad heading of social change we can recognize influences that affect solid waste management. Urbanization increases population density and accelerates waste accumulation. Increasing population increases the quantity of solid wastes. An affluent society discards more than an impoverished one. At the same time urban sprawl is erasing the space between cities, leaving less disposal area.

Half our metropolitan areas cut across two or more counties. One-fifth of them cut across two or more states. The municipality, faced with the necessity of finding disposal sites, looks to nearby areas, but these very often lie in other counties or other states. Since everyone wants wastes collected, but no one wants wastes deposited near him, the conflict between cities and counties or between urban and rural regions can become bitter. Political and social habits have not yet caught up with environmental needs.

The resulting picture is one of disorganized and almost primitive institutional arrangements for solid waste handling, which have been a product of citizen apathy if not distaste for the subject and which, in turn, because of their inadequacies give further support to the undesirable private habits.

(Conclusions and Goals follow Hazardous Waste Management)

d. Hazardous Waste Management

The term hazardous waste means any waste or combination of wastes of a solid, liquid, contained gaseous, or semisolid form which because of its quantity, concentration, or physical, chemical, or infectious characteristics, may 1) cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible illness; or 2) pose a substantial present or potential hazard to human health or the environment. Responsibility for seeing that such materials are disposed of so that they do not degrade the environment or pose a hazard to human health rests with the community, and through its planning and regulatory powers, with the Missouri Department of Natural Resources.

The management of hazardous wastes is emerging as a significant environmental problem in all industrialized nations, and it has become increasingly apparent that prevailing methods of hazardous waste management are largely inadequate to protect the public health. Hazardous waste material disposed upon the land and in lagoons includes the following:

- Inorganic chemicals -- process sludges, dry residues and dusts;
- Organic chemicals -- liquid tars, still bottoms, filter residues, residual pitch solids, filter cakes, spent catalysts, and pesticides;
- Petroleum refining -- tank bottoms, cooling tower sludges, air flotation float, slop oil, biologic sludge, storm silt, spent lime, filter lime, filter clays, fluidized catalytic cracker fines, coking fines, hydrofluoric acid, alkylation sludge;
- Primary metals smelting and refining -- slags, dusts, pollution-control sludges;
- Electroplating -- wastewater treatment sludge, air pollution control sludge, organic solvents, plating solutions;
- Paints -- raw materials packaging, spills and spoiled batches, pollution control sludges and dusts;
- Battery -- process scrap, reject batteries, slag;
- Pharmaceuticals -- waste solvents, still bottoms, filter cakes, rejected materials.

In aggregate, this material is generated at an annual rate of approximately 20 million tons, excluding radioactive wastes and residues resulting from mining operations. The contained components include acutely toxic substances such as cyanide, arsenic, and phenol and compounds with a potential for causing long-term or delayed effects, e.g., vinyl chloride and lead.

Public health effects are normally correlated with the concentration of and duration of exposure to specific contaminants. In the area of hazardous waste disposal, this has been better documented for acute effects resulting from high concentration over a short period of time than for chronic effects resulting from exposure to low concentrations for long periods. Experience teaches, however, that acute events are important predictors of the potential for delayed or chronic events, which are possibly of greater significance to man.

Improper landfill or lagoon disposal of hazardous wastes can provide five major routes for the environmental transport of toxic substances to human populations (Lazar, 1975).²¹ These are leaching to groundwaters; run-off to surface waters; air contamination through burning, sublimation, evaporation or wind erosion, direct contact at the disposal site; and indirect exposure through food chains.

Promiscuous dumping of hazardous wastes and the disposal of unknown materials in lagoons and even in approved landfill sites pose a significant environmental health risk, the dimensions of which are not yet fully appreciated. The prolonged period, possibly decades, which may separate the event of dumping and the contamination of an aquifer or other locus in the food chain complicates appraisal of the associated health risks.²²

The technology for environmentally sound treatment, storage, and disposal of hazardous waste is generally available. It is far from fully used because there has been no economic incentive nor little legal compulsion to do so. Good hazardous waste management can cost 10 to 40 times as much as the unsatisfactory methods in current use -- dumping, ponding, and burial without adequate safeguards.²³

Current System

The solid waste program in Missouri is centered in the Department of Natural Resources, Division of Environmental Quality. The program is divided into three sections, solid waste technical services and enforcement, hazardous waste management, and solid waste planning.

The technical services section is responsible for implementing and coordinating the regulatory functions of the Solid Waste Management Program and provides technical assistance and/or training for facility operators, regional office staff, engineering design consultants, and the public.

The planning section of the program develops and updates the State Solid Waste Management Plan and reviews and assists in the development of city and county solid waste management plan. The planning section also provides support services by providing information to research recovery projects, giving classes on solid waste management, and assisting with the technical aspects of closing dumps and establishing sanitary landfills.

The hazardous waste management section has been given the task of implementing a far reaching Hazardous Waste Management Law passed in 1977 by the 79th General Assembly of Missouri. Their duties pursuant to the law center around three activities:

1. Establishment of a regulatory program including developing a state plan and the necessary rules and regulations (Public hearings have been held on a number of proposed regulations and this section is in the process of finalizing the regulations over this coming year.)
2. Establishment of a seven member Hazardous Waste Management Commission appointed by the Governor. This commission is a real innovation in the management and implementation of a hazardous waste management program. The Commission will adopt the State Plan, promulgate the rules and regulations, and hear appeals on the regulatory program.
3. Establishment of a "cradle-to-grave" hazardous waste management system for Missouri. This system should give Missourians an excellent planning and regulatory program for the continued monitoring of potentially hazardous environmental degradation. The system is composed of five parts:
 1. registration of hazardous waste generators;
 2. licensing of hazardous waste transporters;
 3. issuing permits for storage, treatment, and disposal facilities;
 4. surveying, monitoring, and reporting on disposal facilities; and
 5. enforcing the Hazardous Waste Management Law and assessing penalties.

Other support services provided by the Solid Waste Management Program include their Regional Office Program, Laboratory Program, and Engineering Geology field investigations.

Conclusions

The amount of solid waste generated has grown to serious proportions in recent years. Increased personal consumption, production of toxic substances, and the "throw-away" ethic have contributed greatly to the increase in overall solid and hazardous wastes. This increase has led to exacerbation of four primary problems in Missouri: 1) waste incineration is a major contributor to air pollution; 2) improper location, design,

and operation of landfills for disposal has in some cases led to leaching out of toxic substances which cause water pollution; 3) many landfills are rapidly reaching capacity making it necessary to plan for new disposal methods; and 4) valuable resources which could be recycled are being lost.

Goals, Objectives, and Actions

GOAL: TO MAXIMIZE RESOURCE RECOVERY FROM SOLID WASTES THROUGH SEPARATION AND RECOVERY AND TO MINIMIZE THE ADVERSE ENVIRONMENTAL EFFECTS ON HUMAN HEALTH, LAND, WATER, AND AIR RESOURCES IN MISSOURI.

GOAL: TO ENCOURAGE AND SUPPORT THE DEPARTMENT OF NATURAL RESOURCES IN UTILIZING AN INTERDISCIPLINARY APPROACH TO SOLID WASTE MANAGEMENT TAKING INTO ACCOUNT LOCAL, REGIONAL, AND STATE LAND USE PLANNING AND REFLECTING A COORDINATED APPROACH WITH LOCAL, REGIONAL, AND STATE GOVERNMENT AGENCIES, COMMERCIAL ORGANIZATIONS, AND OTHER INTEREST GROUPS.

e. Noise Control

"Most environmental agents which affect health are foreign to man's evolutionary experience; sound, however, differs in being an excess of what is, at lower levels, a necessary, beneficial, and natural process. Therefore, for noise exposure, the crucial issues are related to quantifying the deleterious effects which occur in the transition range between exposures to sound which are necessary and beneficial and exposures which are clearly harmful (Von Gierke, 1975a)."24

The health effects of excessive noise exposure can be divided into those that are direct and those that are indirect. Direct effects include both temporary and permanent loss of hearing as well as non-aural physiological effects including endocrine, neural, and cardiovascular disturbances. Hearing loss is related to exposure level, to the recovery period between exposures, and to the number and duration of exposures. Indirect effects include those related to communication, to performance and other behavioral patterns, and to annoyance. Long-term annoyance has been shown to be related to the long-term average exposure level.

Table 3.3-3 cites overall sound levels for various sources of noise encountered in different environmental situations. Such noise levels are expressed as decibels measured on the A-network of a sound level meter, abbreviated as dBA. Noise readings in dBA are weighted measures approximating the human ear's sensitivity to different sound frequencies when heard at moderate intensities.

Approximately 3 million Americans live in an environment where the day/night average noise level exceeds 75 dBA, 30 million in an environment in the 65-75 dBA range, and many more live in areas above the 55 dBA identified by the EPA as the level below which deleterious health effects from noise do not occur. Transportation, both aircraft and vehicular, has been identified as the major source of community noise exposure.

Noise levels capable of causing hearing loss occur more frequently in the work environment (EPA, 1976) than in residential or social settings, although some exposures occur in the latter category. Hearing loss is thought to occur following 8-hour daily exposures over a working lifetime at the most sensitive frequencies to the most susceptible individuals at 75 dBA; a considerable portion of those exposed are affected when similar exposures reach 85 dBA. The best available information indicates that over three million persons are exposed to 90 dBA or above for an 8-hour daily average at their workplace. Over four million additional people are similarly exposed to between 85 and 90 dBA, and virtually the entire industrial workforce is exposed to levels exceeding 75 dBA. It has been estimated that 6 million persons have suffered sufficient hearing loss from noise exposure so as to be classified as handicapped (EPA, 1973a).

The environmental noise levels and exposures just noted can adversely affect man in various ways. Most notable effects include:

Table 3.3-3
'A' WEIGHTED SOUND LEVELS OF SOME NOISES FOUND IN DIFFERENT ENVIRONMENTS

OVERALL LEVEL dBA (SPL re 0.0002 MICROBAR)	INDUSTRIAL (& MILITARY)	COMMUNITY (OR OUTDOOR)	HOME (OR INDOOR)
- 130 -	ARMORED PERSONNEL CARRIER (123 dB)		
- 120 - UNCOMFORTABLY LOUD	OXYGEN TORCH (121 dB)		
	SCRAPER-LOADER (117 dB)		ROCK-N-ROLL BAND (108-114 dB)
- 110 -	COMPACTOR (116 dB)		
	RIVETING MACHINE (110 dB)	JET FLYOVER @ 1000 FT. (103 dB)	
- 100 - VERY LOUD	TEXTILE LOOM (106 dB)	POWER MOWER (96 dB)	INSIDE SUBWAY CAR - 35 MPH (95 dB)
	ELECTRIC FURNACE AREA (100 dB)	COMPRESSOR @ 20 FT. (94 dB)	COCKPIT-LIGHT AIRCRAFT (90 dB)
- 90 -	FARM TRACTOR (98 dB)	ROCK DRILL @ 100 FT. (92 dB)	FOOD BLENDER (88 dB)
	NEWSPAPER PRESS (97 dB)	MOTORCYCLES @ 25 FT. (90 dB)	GARBAGE DISPOSAL (80 dB)
- 80 -	COCKPIT-PROP AIRCRAFT (88 dB)	PROPELLER AIRCRAFT FLYOVER @ 1000 FT. (88 dBA)	CLOTHES WASHER (78 dB)
	MILLING MACHINE (85 dB)	DIESEL TRUCK, 40 MPH @ 50 FT. (84 dB)	LIVING ROOM MUSIC (76 dB)
- 70 - MODERATELY LOUD	COTTON SPINNING (83 dB)	DIESEL TRAIN, 40-50 MPH @ 100 FT. (83 dB)	DISHWASHER (75 dB)
- 60 -	LATHE (81 dB)	PASSENGER CAR, 65 MPH @ 25 FT. (77 dB)	TV-AUDIO (70 dB)
	TABULATING (80 dB)	NEAR FREEWAY-AUTO TRAFFIC (64 dB)	VACUUM (70 dB)
- 50 - QUIET		AIR CONDITIONING UNIT @ 20 FT. (60 dB)	CONVERSATION (60 dB)
- 40 -		LARGE TRANSFORMER @ 200 FT. (53 dB)	
- 30 - VERY QUIET		LIGHT TRAFFIC @ 100 FT. (50 dB)	
- 20 -			
- 10 - JUST AUDIBLE			
- 0 - THRESHOLD OF HEARING (1000 - 4000 Hz)			

NOTE: UNLESS OTHERWISE SPECIFIED, LISTED SOUND LEVELS ARE MEASURED
AT TYPICAL OPERATOR-LISTENER DISTANCES FROM SOURCE.

Source: Department of Health, Education, and Welfare, Manual for Environmental Health Planning.

1. temporary and permanent hearing loss;
2. physical and mental disturbances;
3. interference with voice communication;
4. disruption in job performance; and
5. disruption of rest, relaxation, and sleep.

Noise-induced hearing loss is believed to be the most serious physical health hazard posed by excessive noise, and such problems are prevalent in mechanized industry. Surveys in a cross-section of manufacturing, construction, mining, farming, and other occupations have found noise levels potentially harmful to hearing, and hearing studies on some select worker groups have shown the workers to have poorer hearing than those in quieter jobs (office workers). Estimates of the total number of production-line workers experiencing noise conditions hazardous to their health range from 6,000,000 to 17,000,000. The true figure is unknown.

Recognition of noise and hearing loss problems in industry has prompted the passage of regulations to curb this health hazard (90 dBA per 8 hour daily exposure). The criteria for noise limits still lack wide acceptance among noise experts who believe that more information will be needed to justify limits prescribed for certain types of industrial noise conditions.

Community and home noise exposures, owing to their generally less severe nature, do not pose the same hazard of noise-induced hearing loss as is the case in industry. Yet, it is now contended that exposures to the aggregate of noises characterizing life in a modern society -- noises from mass transportation, arrays of household appliances, power tools, and hobbies and recreational activities -- can cause some degree of hearing loss aside from that due to the work environment.

There is much conjecture as to whether excessive noise conditions can cause physical or mental health disorders. That noise can trigger changes in cardiovascular, endocrine, neurological, and other physiological functions, with correlated feelings of distress, is readily demonstrated. At issue is whether repeated noise-induced changes of this nature ultimately result in a disease process.

Many noise experts believe that man's tolerance to noise is quite high and that most environmental noise conditions can be adapted to without ill effects. Yet, there are others who maintain that the stressful effects of noise, alone or together with other stress factors, can eventually overwhelm man's capability for healthy adjustment with resultant physical or mental health problems. Scattered evidence for both points of view exist, but in point of fact crucial, systematic studies remain to be done in this problem area.

Noise not intense enough to cause hearing damage or other physiologic effects may still disrupt speech communication as well as the hearing of other desired sounds. In industry, this disruption can degrade efficiency on jobs requiring reliable communication by voice. Much is known about the masking effects of noise on speech and recommended noise limits for offices are based on these masking considerations. Inability to hear warning signals or shouts of caution in other workspaces because of high level noise can also be implicated as a factor in industrial accidents, but data to indicate the significance of this problem are not available.

Annoyance reactions to noise intruding in communities also have risen from interferences while talking and listening activities. Schools neighboring busy airports and roadways have experienced severe disturbances of this nature and in some cases have had to close down. Measures of the masking effects of noise on speech are now being considered as a basis for establishing permissible outdoor noise limits in city noise ordinances.

The effects of noise on performing tasks for which voice communication is not necessary are quite variable and depend greatly on the nature of the noise conditions present, the task being performed, and the attitude of the worker. The most consistent laboratory evidence for noise-performance loss has been shown for those tasks requiring complete and unremitting attention. Consistent with these laboratory findings, work on jobs involving vigilance activities, such as monitoring machines and quality control inspection, show improvement with the introduction of noise control.

Unpleasant associations (with sounds) together with still other social and psychological factors hopelessly complicate the development of any acoustic scale for depicting general "noise" annoyance. Considerations such as these also make it clear that there are no practical means for freeing anyone from annoyance problems caused by noise.

Conclusions

The control of noise has become a major issue in the last decade. The effects of noise are not often readily discernible. However, five basic premises form the groundwork for a positive health policy toward abatement of excessive noise: 1) excessive noise is a serious hazard to health, and the quality of life; 2) exposure to certain levels of noise can result in psychological, and economic damage to human health; 3) the science and technology for abating noise generally exists; 4) primary responsibility for control of noise rests with the state, regional, and local authorities; and 5) each person has a right to an environment free from noise that may jeopardize a person's health, safety, and welfare.

Goals, Objectives, and Actions

GOAL: RESIDENTS OF MISSOURI SHOULD BE ENSURED OF AN ENVIRONMENT FREE FROM NOISE THAT JEOPARDIZES THEIR PHYSICAL AND MENTAL HEALTH.

3. Food Protection

a. Sanitation and Safety

One of the basic needs of man is a safe, wholesome, and nutritious supply of food. Without assurance of such a supply, the health and well being of the consumer is impaired. Food can be a vehicle of disease transmission, sources of toxins, poisons, and the cause of malnutrition or oftentimes overnutrition.

It is estimated that from two to ten million people in this country contract some form of microbial foodborne disease annually. The economic loss to the country as a result of this problem, in terms of the drain on our medical resources as well as the lost productive effort, amounts to many millions of dollars each year. The development of new foods and the widespread use of new technological procedures in the food industry have contributed to the proliferation of products whose impact on public health is relatively unknown. The use of filthy or decomposed raw materials or insanitary conditions in food manufacture and processing permits possible health hazards to exist in the finished products.

Rapidly advancing nutritional knowledge over the past 50 years has brought about improvement in the quality of our diet. This has led to a remarkable decrease, though not the total elimination, of nutritional deficiency diseases. The nutritional improvement in our diet must be maintained and improved by ensuring that nutrients are not destroyed by improper handling, storage, decomposition or unsanitary conditions, and by providing manufacturers who introduce new foods or new food processing techniques with sets of guidelines for the nutritional quality.

The protection of the nation's food supply is a major problem throughout the country. Food protection has become sufficiently complex to almost defy complete control at any one level of government. Sanitation problems can occur in any of the 45,000 food processing establishments, or among 25,000 manufacturers, warehouses, and other types of firms. In addition, there are approximately 500,000 restaurant-type food service establishments in the United States in which contamination can occur.

There is a need to coordinate and strengthen the existing programs to provide more comprehensive protection throughout the food processing chain, delivery to the marketplace, and to the ultimate consumer. Environmental health agencies have a responsibility to see that this protection is provided, whether directly through their operation or through the efforts of other competent agencies.

The primary elements which comprise the mission of a food protection program are:

1. to assure a wholesome and clean food supply free from unsafe bacterial and chemical contamination, filth, and natural or added deleterious substances;

2. to assure adequate nutrition to the consuming public by ensuring compliance of foods with established nutritional quality guidelines, and with standards of quality and identity, and by ensuring that foods marked for special purposes are suitably labeled to fully inform the consumer as to their nutritional attributes for that purpose; and
3. to reduce foodborne disease transmission and prevent significant microbiological and chemical contamination and decomposition during production, processing, distribution, storage, preparation, and service.

Because of the broad spectrum of problems involved in food sanitation and safety, it is not feasible to enumerate all areas of concern; however, certain primary areas warrant the attention of the State and local food regulatory agencies.

The chemical entities comprising those constituents of foods that are pertinent to food safety encompass a wide spectrum of substances that are introduced into foods through a number of routes. Such substances can be categorized into two groups: 1) those present as naturally-occurring components or contaminants; and 2) those added by man in the course of food manufacture or preparation.

From the standpoint of toxicology, the breadth of this field makes it difficult to single out individual substances or even groups of related substances for attention. A comprehensive list of the known chemicals comprising the entire group of naturally occurring toxicants and intentional or accidental additives in foods encompasses a vast array of chemical types. Consideration of this broad range of substances reveals many problems of public health significance which require further research effort. In the sections that follow, a list of primary problems have been identified that require immediate attention; it should be recognized, however, that many other important problems exist.

Microbiological contamination: It is estimated that approximately ten million persons suffer from foodborne illness annually. Salmonellosis, shigellosis, illness due to *C. perfringens*, *Vibrio* and viruses, food poisonings caused by staphylococcal enterotoxins and botulinal toxins typically are transmitted through contaminated foods. Development of new foods, changing distribution systems, centralizations of food processing, and the widespread use of new technological practices and process control procedures have resulted in the potential for foodborne illnesses. Illness associated with food prepared in restaurants and catering establishments is a continuing serious problem.

Problems of food sanitation and safety are characterized by the use of filthy or decomposed raw materials or by unsanitary conditions in food manufacture and processing plants which permit finished product contamination. This contamination often indicates more serious conditions that

may have detrimental health implications. Thus, when viewed in its proper context, "sanitation" is an integral part of all other food programs. Sanitation problems can occur in any of the food establishments in the United States. Over half of these firms handle food products especially susceptible to microbiological contamination or decomposition.

Chemical Additives Contamination: Among the non-nutrient constituents added to foods by man are substances intentionally placed, or produced, in foods by the application of some form of processing. Also included are those components of food that occur as residues from seed, soil, or crop treatment or as residues of animal feed additives. The utilization of food additives has increased drastically in the past ten years. It is estimated that the average American consumes three pounds of chemical additives in his food each year.

Here the problem in food protection includes assurance that the additive performs its intended use only, and that the maximum level of each additive introduced into the total food consumed is known and does not exceed an established tolerance for that additive. It is also important to be certain that only approved additives are used.

The long-term ingestion of naturally occurring substances, toxic mold metabolites, such as aflatoxin (a human toxic carcinogen), fish and other marine toxins and toxic substances is potentially harmful. In addition, certain essential nutrients may be used in excessive and potentially toxic amounts because of ignorance, abnormal taste or well-meaning zeal for good nutrition. These include salt in foods for infants and adults, various amino acids for flavor or technological use, and vitamins A, D, K, folic acid or some of the mineral essentials.

The components of food which are intentionally added are well-characterized, both chemically and biologically. However, such additives constitute only a very small fraction of the food supply. No segment of the environment to which humans are exposed is as chemically complex as food, yet knowledge of the intrinsic chemical components of food, except for the nutrients, is very poor.²⁵

While it is generally assumed that the natural components of food, even those known to be toxic, do not constitute a health hazard, there is very little information on the toxic effects resulting from ingestion of these compounds. Simply because these foods have been consumed for many centuries without obvious health effects, is not sufficient reason to conclude without appropriate investigation that these substances are innocuous.

Substances identified as having at least a minimal effect on food safety are listed below:

- a. Plant toxins
- b. Marine toxins
 1. PSP "red tide"

- c. Fungal toxins
 - 1. aflatoxin
- d. Intentional Food Additives
 - 1. nitrates
 - 2. nitrites
 - 3. nitrosamines
 - 4. sodium chloride and phosphates
- e. Food Contaminants
 - 1. mercury
 - 2. lead
 - 3. cadmium
 - 4. other trace elements
- f. Organic Contaminants
 - 1. pesticides (DDT, dieldren, etc.)
 - 2. herbicides

Nutritional quackery, (i.e., deceptive and misleading claims in labeling) is a major problem and is estimated to cost American consumers as much as \$500 million a year. This estimate of \$500 million does not cover the area of slack fill, poor quality, substitution of cheaper ingredients for more expensive ingredients, low drained weights, etc. Adequate food standards serve to protect the health as well as the pocket-book of consumers, particularly those who otherwise might fail to obtain the expected nutrients in a diet which is already marginal or submarginal.

Another problem is the protection of the nutrients in food from loss due to improper storage, excessive shelf life, rancidity, or new technological processes. This is especially serious in foods promoted specifically for their nutritional values. Additionally, individuals responsible for food preparation and handling in public eating establishments should be made aware of the importance of protecting foods from nutritional deterioration through poor handling during preparation. This problem has not yet been adequately explained to the food service industry and poor food handling techniques are still a common practice in food service establishments.

Current System

Missouri has approximately 5,943 food service establishments. Present estimates indicate that one meal in three is consumed away from home and projections are that this will increase into the 1980's. The amount, type, and quality of the food consumed, given these projections, becomes very important from a public health perspective.

To enforce legislation designed to protect the public from food-borne illness and unwholesome food, the State Division of Health certifies both state and local health department sanitarians and inspectors who have the responsibility to enforce Missouri's Public Health Code.

As seems to be the case in many states, establishments are not being inspected as mandated. The State Division of Health and local health departments do not have adequate staff to do this job as they would like. Compounding these problems is the fact that personnel involved in food service programs at both local and state levels also have other responsibilities e.g., housing, water supply, sewage disposal.

Food safety activities center around Federal laws and National enforcement. The Delaney clause as promulgated by the Food and Drug Administration provides for determination of carcinogenicity of additives in cosmetics and foodstuffs. Little enforcement on the state level takes place. Federal inspectors working through local agencies provide what "local" inspection is performed relating to food safety.

b. Nutritional Quality

"The stamp of each culture's cuisine is unique: Americans have hamburgers, the French rich sauces, the Japanese raw fish. Nevertheless, the basic nutritional component, if not the particular dishes, of all diets invite comparisons. And such comparisons reveal that over the last century or so, a consumption pattern sometimes called the "affluent diet" has taken hold in the industrialized Western Countries."²⁶

The affluent diet described here can only flourish where incomes are far higher than a subsistence level and where people have access to a highly productive agricultural system. The affluent diet is one where large amounts of animal proteins and fat as meats and dairy products are consumed and where highly refined sugar and flour have been substituted for bulky carbohydrates like whole grains, fresh fruits and vegetables. In addition, commercially manufactured foods are increasingly being chosen over the unprocessed products.

By all "traditional" measurements this diet would seem to be satisfactory. It provides generous amounts of protein (even excessive amounts), key vitamins and minerals. The diet is also protective against some of the age-old nutritional problems of scurvy and pellagra. However, the link between the way people eat and the incidence of a variety of diseases has cast some doubt on the soundness of the "affluent diet." The most suspect characteristics are its high level of fats, especially animal fats. Most people realize that fats are concentrated in fried foods, butter, dairy products, etc., but few people realize that fats come in more subtle forms. Meats, especially beef and pork, add a great deal of fat to the diet. In fact, fats now account for 45 to 50 percent of the calories in America's diet.²⁷

The type, as well as the amount, of fat that people eat has health implications. High consumption of saturated fats, supplied mainly by animal products, may promote cardiovascular problems and, possibly, some cancers. Unsaturated fats seem to have fewer health risks, but they also appear dangerous when consumed at high levels.

Opposing forces have influenced the consumption of vegetable and animal fats. Financial and health considerations have pushed people to switch from butter to vegetable-based margarine and from lard to hydrogenated vegetable oils. At the same time, however, rising meat consumption has seemingly offset these health benefits. Overall, animal-fat intake remains high and total fat consumption has been driven upward.

Even the grain that remains in the affluent diet is stripped of most of the fiber or roughage. Wheat is usually milled into refined white flour. Raw or lightly cooked fruits and vegetables, which also provide fiber, are increasingly being passed over in favor of canned or frozen foods, which are often overcooked. Those fruits and vegetables that are bought fresh are often peeled or overcooked before they are eaten. Reducing dietary fiber in this manner apparently alters the chemistry of digestion, which in turn possibly promotes various diseases of the digestive system.

Starch intake has also dropped along with the consumption of bulky foods and fiber in the affluent diet, and sugar intake is rising. While few traditional societies use refined sugar at all, and recipes calling for sugar were rare in Europe and North America a century back, high sugar consumption now plagues the United States. Per capita sugar consumption in the U.S. has grown by half just since 1950, and the average person in the world now eats forty-four pounds of sugar a year. Americans consume over a hundred pounds of sugar a year. As the U.S. sweet tooth grows, so do its dental bills. An obvious contributor to tooth decay, high sugar consumption may -- some researchers contend -- also be linked to obesity, diabetes, and other diseases.

"As the affluent diet has spread, so have many once rare diseases such as coronary heart disease, diabetes, diverticulosis, and bowel cancer. Confined primarily to those leading the life styles of the developed Western world, these ailments have been appropriately tagged the "diseases of civilization." Where they prevail, improved sanitation and ample food supplies have largely stamped out fatal infections and undernutrition -- which have been replaced by modern diseases that strike not only the old. Some ingredients of modern Western life -- and dietary factors are among the leading suspects -- are abetting these killers.

Medical researchers are slowly unraveling the tangled interconnections that link the affluent diet to the various diseases of civilization. Combined with a sedentary life style, high calorie consumption leads to obesity, which in turn encourages diabetes, hypertension, and coronary heart disease. High intake of refined foods such as white flour and sugar may encourage diverticulosis and other conditions, while high salt intake possibly promotes hypertension. (Diabetes and hypertension, sometimes directly lethal, greatly boost the risk of coronary heart disease and, for those suffering from hypertension, stroke.) A diet high in animal fat fosters arterial problems that can lead to a coronary attack or stroke. Finally, excessive dietary fats may also be linked to the genesis of bowel, breast, prostate, and other types of cancer."²⁸

Many doctors and nutritionists studying overnutrition recommend the following changes for those consuming an affluent diet: fat consumption should be reduced considerably and, whenever possible, saturated fats should be replaced by unsaturated fats; cholesterol intake, especially by men, should be cut radically; sugar and salt intake should be sharply reduced; consumption of whole grains, potatoes and other starchy foods, and fresh fruits and vegetables should be increased; and, above all, personal energy intake and energy expenditure should be kept in balance, in part by calorie budgeting and in part by engaging in more physical activity. Changes such as these do not come easily; for many, they violate lifelong habits and strongly ingrained notions about which foods are healthy and tasty.

A national strategy to counter overnutrition, like one to eliminate undernutrition, must involve a wide range of policies, not all of them directly linked to food and agriculture. In the U.S., the marketplace

has its own set of priorities, and health is not one of them. Nutrition planning must include the development of economic incentives and institutions that encourage healthy food-production and consumption patterns.

With afflictions such as coronary heart disease, whose development spans decades and is obviously influenced by many factors, the exact role of any one factor necessarily remains elusive. However, that aspects of the affluent diet promote atherosclerosis and heart disease, the leading killers in the U.S., has been proven beyond reasonable doubt. The understanding of dietary influences on other diseases such as cancers of the bowel, breast, and prostate is much less advanced. Yet, the dietary changes that the leading theorists of cancer causation call for are precisely those that help reduce the threats of heart disease and obesity.

"Certainly more remains to be learned about diet and health, but, as Dr. D. Mark Hegsted of Harvard University observes of problems of data and proof in this field, "one does not need to know all of the answers before one can make practical recommendations." The dietary changes that doctors are prescribing involve no foreseeable health risks; quite the contrary, all evidence points to the great risks involved in clinging to our current diets. The only known risk associated with more prudent diets is that to the food industries that would be affected. But, "while these industries deserve some consideration," remarks Dr. Hegsted, "their interests cannot supersede the health interest of the population they must feed."²⁹

Conclusions

Protecting Missouri's food supply and ensuring its nutritional adequacy is a major problem. Food protection and safety have become so complex as to defy control by any one level of government. Evaluation of food service establishments and food supplies now involve monitoring both the biological status (bacterial) and physical-chemical (toxic substances) status of food and food handlers. Thus, the traditional "sanitation" activities have been complemented by activities relating to the elimination of possible long-term hazards to human health.

Nutritional adequacy is also a complex concern. Problems of both undernutrition and overnutrition exist in Missouri. However, the establishment of a "perfect diet" is difficult given the varying social and cultural differences among the population.

Goals, Objectives, and Actions

GOAL: ALL PERSONS IN MISSOURI SHOULD BE ENSURED OF PROTECTION FROM
FOODBORNE DISEASES AND HARMFUL CHEMICALS AT FOOD SERVICE ESTABLISHMENTS
AND FROM FOOD SUPPLIERS AND SHOULD HAVE AN ADEQUATE CHOICE OF HIGH
QUALITY AND NUTRITIOUS FOOD BASED ON SOCIAL AND CULTURAL CHOICE.

4. Occupational Health and Safety

That jobs might be hazardous is not a new idea. However, until quite recently, both workers and lawmakers failed to grasp the problem's scope. "Occupational health" once usually referred to the attempt by management or unions to limit the number of limbs lost to machinery, eyes damaged by chemical sprays, or lives lost in explosions or mine cave-ins. Although numerous laws have governed industrial safety (e.g., OSHA), the threat of on-the-job accidents remains real enough. "In 1971 in the United States, calculates Nicholas A. Ashford, more than one in forty industrial workers died or suffered a reportable injury on the job. In that year, reported accidents at nonagricultural workplaces in the United States caused more than 14,000 deaths, over 100,000 permanent disabilities, and upwards of two million temporary injuries."³⁰

As big a problem as it is, the "traditional" threat of industrial accidents looks small beside that posed by the occupational diseases that medical researchers are now identifying. The U.S. Public Health Service has estimated that 390,000 new cases of occupational disease appear annually in the United States while up to 100,000 occupational disease-induced deaths occur each year. Because many occupational illnesses develop slowly, the dimensions of occupational disease remains relatively unknown. The more the problem is studied, the more pervasive it seems to be.

Occupational health hazards to which workers may be exposed are usually classified into the following categories:

- a. Toxic chemical agents such as solvents, dusts, gases, metallic compounds, plastics and synthetic resins, and pesticides.
- b. Physical agents or energy stresses such as excessive noise, temperature extremes, vibrations, pressures, and ionizing radiations.
- c. Biological hazards such as infectious agents and enzymes.
- d. Other work-related stresses such as rigors of work process, equipment design, workplace layout, relationship between capabilities and tolerances of the individual worker and the demands and stresses of the job.

As a rule, occupational skin diseases are numerically the most prevalent of occupational diseases, the pneumoconioses are the most costly from the standpoint of workmen's compensation, and occupational poisonings continue to increase, despite the existence of knowledge for controlling them.

The breadth of the occupational health problem including both accidents and diseases, is difficult to comprehend. Workers in an industrialized society, such as ours, face special health risks. As a consequence, we see both short and long-term occupational hazards in nearly every profession.

Miners face the highest health risks from both the standpoint of accidents and mine disasters and disability or death from chronic lung diseases due to mineral dusts. They also have higher than normal cancer rates.

Industrial workers face a host of hazards, some new and some old. The hazards range from inhalation of toxic chemicals to loss of hearing from incessant loud noise. This same group lives under noise-related stress that may promote cardiovascular and neurological disorders. The petrochemical and plastics industries have also exposed workers to a whole new set of hazards. The long term health effects of the many hundreds of thousands of chemicals in industrial use are not known.

Agricultural workers rank alongside miners as a group manifesting a disproportionate share of occupational injuries and illnesses. While constituting only 4.5 percent of the labor force in the U.S. in 1971, farm workers accounted for approximately 16 percent of the country's recorded occupational deaths and 9 percent of the recorded injuries.³¹ Only mine and construction workers have worse records. Farm worker poisoning by pesticides and herbicides is also an enormous and considerably underestimated problem. Most pesticide induced maladies are either never brought to a doctor's attention, inaccurately diagnosed, or unreported due to the temporary nature of the malady.

Occupational diseases that afflict women constitute another health category. While women constitute an ever increasing percentage of the national workforce, all but a small fraction of occupational medical studies have involved male subjects, and little is known about sexual differences in the response to toxic substances. At the turn of the century, well publicized abuses of women (and children) in unsafe workplaces spawned laws designed to protect them. Today, however, many new questions about women's occupational health are being raised as more and more women risk exposure and as our medical understanding of toxic substances grows.

The potential for fetal exposure to dangerous substances or radiation is especially high. In the United States alone, many women of childbearing age are exposed on the job to chemicals and metals that might cause birth defects, cancer, miscarriages, or possibly, behavioral problems. While the developing fetus is considered more sensitive than an adult to hazardous agents, sufficient knowledge on which to base allowable exposure standards for pregnant women have not been established. Given the uncertainties, the current trend in some industries is to bar all fertile women categorically from jobs that entail a chance of fetal damage. However, women continue to move into industrial jobs traditionally

held by males and, in addition, some factories and shops traditionally employ mainly female workers. In both cases, women have the same needs as men -- for close medical attention to potential hazards, open access to information about hazards, and for all possible safeguards.

Health hazards in workplaces, like overall environmental degradation, represent production costs that have seldom been counted, let alone billed to those responsible for them. Interjecting both worker and community health considerations more fully into economic decisions will promote better worker protection. It will also insure that, when prevention fails, workers will be more justly compensated for their unwitting sacrifices.

Current System

Within the last decade, occupational health has become an issue to more people whether they be professionals, scientists, workers, or government. The occupational origins of some cancers and lung afflictions have also become more widely understood. Unions and management both have begun to show serious interest in the long term disease threats as well as traditional job safety.

The passage in 1970 of the Occupational Safety and Health Act and in 1976 of the U.S. Toxic Substances Control Act has moved the States, if haltingly, toward a more systematic approach to the occupational health problem. In Missouri, the majority of the responsibility for ensuring workplace safety still rests with the Federal government. The imperative of profits usually conflicts in the short run with worker protection and "unless all producers . . . are forced to comply with . . . national standards, competing advantage may flow to the producers that are least responsive to workers health needs.³²

Conclusions

All indications are that a multitude of occupational influences on disease, especially those that promote cancer, have defied detection. It is also evident that even known threats are not being dealt with directly. Individual attitudes and worker behavior are also important considerations. In summary, balancing the benefits of producing a particular product against long-term, imprecise health risks that production can entail is as much a matter of personal and social judgment as it is of economic analysis.

Goals, Objectives, and Actions

GOAL: TO ENSURE AN OCCUPATIONAL ENVIRONMENT WHICH CONTRIBUTES POSITIVELY TO THE HEALTH AND WELL BEING OF WORKERS, THEIR FAMILIES, AND THE STATE AT LARGE, THROUGH ELIMINATION OF RISKS OF ILLNESS AND INJURY IN THE OCCUPATIONAL ENVIRONMENT AND SURROUNDING AREA.

5. Radiation Safety

Mankind is continuously bathed in a sea of radiation from naturally occurring sources such as the ground (terrestrial), outer space (cosmic), and the food consumed. Man has added to these sources of radiation through nuclear weapons testing, air travel, watching TV, smoking, using natural gas for space heating and cooking, medical diagnosis and therapy, etc. Today the average person in Missouri can get a radiation exposure that ranges from 130 millirem/year from natural unavoidable sources to up to 272 millirem/year when the other sources mentioned above are included.

A variety of uses of nuclear radiation such as medical, educational, and industrial have created additional sources for radiation exposure. Major sources (such as medical) can contribute significant (more than 20 percent of natural background radiation) exposures to patients.

Table 3.3-4 shows the relative exposures and sources of both natural and man-made occurring radiation (see also Environment and Cancer).

Exposure to radiation can result in biological damage which may not be immediately apparent. The damage manifests itself in various ways and the effects of exposure vary widely depending upon type of radiation and duration, magnitude, and portion of the biological system exposed (see Figure 3.3-1). There are delayed somatic effects such as leukemia, reduced life span, precancerous lesions, and neoplasms which do not appear for years following an acute or chronic exposure. There are also genetic effects (mutations affecting progeny of irradiated persons) which do not become apparent for many generations.

The health significance of any specific source of radiation is related to (a) number of sources in use, (b) anticipated growth rate, (c) population at risk, (d) relative toxicity, (e) length of exposure, and (f) totality of radiation sources within the environment. Problem areas include:

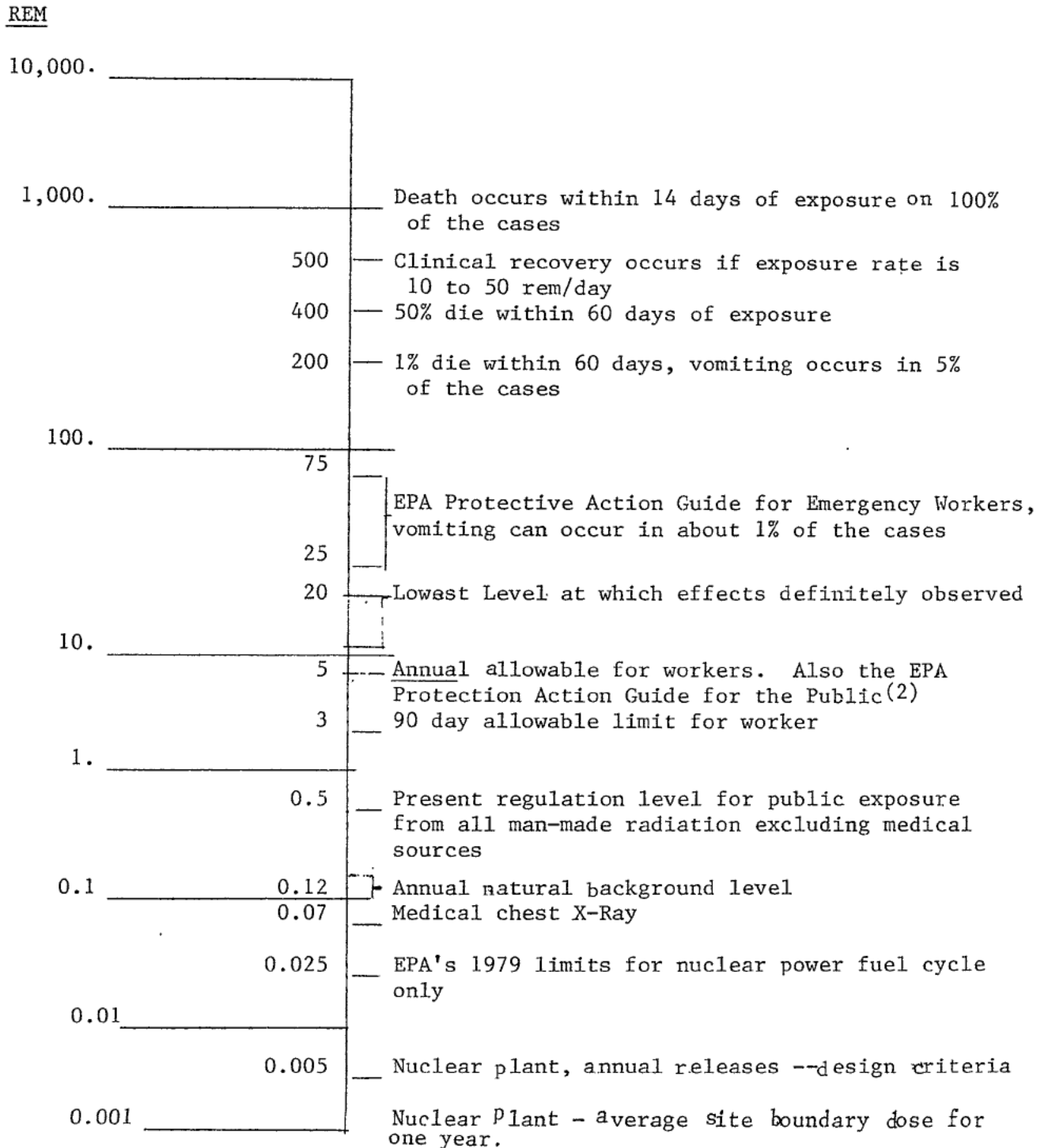
1. Electronic devices capable of producing radiation incidental to their use or which may emit radiation by design. These include but are not limited to devices used for medical diagnosis and therapy, educational purposes, commerce and industry (e.g., lasers, x-ray diffraction) and devices used in the home (e.g., television receivers, microwave ovens).
2. Radioactive materials used for medical, industrial, educational and other purposes.
3. The effects on the environment and the population of discharges of radioactive wastes from nuclear power plants, nuclear fuel reprocessing plants, nuclear explosives, transportation of nuclear wastes, and radioactive waste disposal.

Table 3.3-4
Sources of Radiation

	Millirem/Year, Person	Total Annual Exposure to the Average Person Millirem/Year
<u>A. Cosmic (sky)</u>		
Connecticut and Massachusetts	40	40
Colorado	120	
<u>B. Terrestrial (Ground)</u>		
Connecticut	60	
Massachusetts	75	115
Colorado	105	
<u>C. Internal (From our bodies)</u>	25	140
<u>D. Fallout (Nuclear weapons tests)</u>	4	144
Total (Per Person)		
Connecticut	129	
Massachusetts	144	144
Colorado	254	
<u>E. Other Sources</u>		
(1) Residents of wood houses	29 to 100 (Use 50)	194
(2) Residents of granite houses	75 to 300	
(3) Smokers - lung	210	
- whole body	30	
(4) Natural gas in homes		
Cooking - lung	15	
Heating - lung	54	
(5) Watching TV	2	196
(6) Air travel (round trip cross country)	4	200
(7) Chest X-Ray	72	272
(8) Nuclear power plant (within 10 miles)	0.1	

Source: Environmental Protection Agency.

Figure 3.3-1
WHOLE BODY--RADIATION DOSE EFFECTS (1)
 (1 REM = 1,000 Millirem)



NOTES:

(1) Unless otherwise noted the total exposure occurs within a few hours to a day.

(2) 0.04% chance of incidence of cancer (BEIR Report).

Source: Environmental Protection Agency,

Recent studies have indicated that there are a great number of unknown variables and a great number of problems related to the long-term effects of exposure to low level radiation hazards.

Overirradiation due to excessive utilization of diagnostic x-rays exposes humans to more radiation than television and jet travel combined. Common routine examinations (utilizing x-rays) are usually conducted on the grounds that people with unsuspected illness can have them diagnosed and treated at an early stage. "However, regular examinations cost money, direct resources from other health programs, and in the case of x-rays, involve some degree of risk."³³ Even though use of x-rays have been of great benefit to many people, their potential dangers to our health must be considered before a decision to conduct an exam is made.

Ineffective and sometimes misutilized radiotherapy techniques are possibly more of a hazard than a cure when used for treating malignant tumors.³⁴ The side effects of cancer treatments are widely known. Survival rates for persons treated through therapeutic x-ray techniques are coming under renewed scrutiny and questions have been raised as to the overall efficacy of many therapeutic techniques.

Nuclear power plants and their associated health hazards have also come under severe scrutiny (see Environment and Cancer). This technology once thought of as "benign" and relatively inexpensive is now being judged as very costly and very dangerous to human health.³⁵ Through the generation of low-level radioactive wastes and highly toxic fission products (e.g., plutonium) and the likelihood of an accident due to either natural or man made causes, utilization of nuclear power is questionable in its long term positive health effect on society. The accompanying support system of fuel reprocessing plants and a transportation system enhance the likelihood of environmental exposure (see bibliography for specific reference and analysis). For example, a General Accounting Office report released in August, 1978, found that on-site "waste treatment system operational problems have increased the potential of worker exposure to unnecessary radiation and have caused unplanned releases of waste to the environment." The report went on to site a number of important factors related only to the one problem of regulation of on site nuclear waste disposal. As discussed earlier in the Environment and Cancer section, the greatest radiation hazard from nuclear electrical generating plants is the problem of safe storage of extremely radioactive wastes for extremely long periods of time. With some waste products having half-lives of 200,000 years there is an understandable lack of knowledge of how to contain such hazardous waste.

As we project into the future, our ability to retard radiation induced disease does not seem promising. As emphasized, the storage and transportation of spent nuclear wastes from nuclear power plants is a particular health problem this agency sees as being unsolvable with the present state of the art. Until a method of disposing of waste products that are hazardous for thousands of years is developed, the potential for environmentally induced negative physiological responses will heighten. In all cases of man-made uses of nuclear radiation, the good in terms of societal benefits must be weighed against potential harm.

Current System

The Bureau of Radiological Health in the Missouri Division of Health is charged with the monitoring and inspection of equipment utilizing or emitting ionizing radiation (see 3.5 Radiological Overview). No Missouri agency is directly involved with the inspection of nuclear power plants or other facilities utilizing radioactive material or has the responsibility for an assessment of their eventual positive or negative effects on man or the physical environment. A report developed in mid 1977 by the Missouri Department of Natural Resources, succinctly summarizes the activities in Missouri related to identification of potential and actual radiation hazards. Sections of that report are excerpted for inclusion here.

RADIATION FACT SHEET

Facilities Using Radioactive Material

Manufacturers - The state has two major manufacturers of radiopharmaceuticals and radiochemicals:

Industrial Nuclear Company, industrial processor of radiopharmaceuticals
9641 Lackland Road
St. Louis, Missouri

Mallinckrodt Chemical Works, industrial processor of both
2703 Wagner Place
St. Louis, Missouri

Reactors - The state has two university-operated reactors, one located at Rolla and one located at Columbia.

Power Plants - Missouri has no nuclear power plants at present. Missouri's first plant is being constructed by Union Electric in Callaway County. Uneasiness over this reactor due to the experience at the 3-Mile Island reactor is causing re-evaluation of the need and efficacy for construction of the Callaway facility. Missouri is also vulnerable to radiation exposure from two outstate nuclear power plants. One of these plants is the Quad Cities Plant in Cordova, Illinois, on the Mississippi River upstream from St. Louis. The other is the Cooper Nuclear Station just across the Missouri River in Brownville, Nebraska. The wind direction at this plant is into Missouri 66 percent of the time, and the water supply for St. Joseph is only 80 miles downstream.

Fuel Fabrication - One fuel fabrication plant operates in Missouri: Combustion Engineering Plant, Hematite, Missouri. This plant converts uranium hexafluoride (UF_6) into uranium dioxide (UO_2) powder, which is then molded into fuel elements for light water reactors. It uses about 1,833 pounds of UF_6 per day, and because of the small weight changes

during the conversion process, produces approximately 1,800 pounds per day of UO_2 . These uranium compounds have a low level of radiation; how low depends on the type of uranium isotope contained in the compound. In addition to its potential for radiation, it should be noted that uranium hexafluoride is toxic to humans.

Hospitals - Several hospitals in the state use radioisotopes and radiopharmaceuticals. A survey of one of the major hospitals in St. Louis indicated that they were using the following types of radioisotopes: H_3 (Tritium), Phosphorus³², Iodine¹²⁵, and Iodine¹³¹.

Radioactive Shipments

Radioactive materials are currently being transported into and out of the State of Missouri. Some of these materials are merely shipped through the state. For example:

1. The Kerr-McGee facility at Gore, Oklahoma, ships uranium hexafluoride through the state on a weekly basis. They use Interstate 44 to transport these materials through Missouri to a facility in Ohio.
2. The federal Energy Research and Development Administration routes radioactive materials through Missouri. These include seven rail shipments and three truck shipments through Missouri per month.

Other shipments either originate or have their final destination in Missouri. Among these are:

1. Shipments of uranium hexafluoride to Combustion Engineering. These take place on a weekly basis. The route used appears to be Interstate 70.
2. Shipments from the research reactor at Columbia. These shipments include: an annual shipment of spent fuel to the Nuclear Regulatory Commission's Savannah River facility in South Carolina, a small weekly shipment by truck or mail to Monsanto, and a weekly shipment of the radioisotope Molybdenum 99 (half-life = 68 hours) to Mallinkrodt who provide their own transportation.
3. Shipments from Mallinkrodt. This company sends some 500,000 pharmaceutical shipments per year by common carrier.
4. Shipment by Radio Pharmacy of Kansas City to various users in the state.
5. Shipments out of the state from Combustion Engineering Plant which manufactures fuel pellets.
6. Shipments from various hospitals in the state. One major hospital indicates that it ships its waste to Nuclear Engineering Company's site at Sheffield,

Illinois. Their shipments occur bi-weekly and vary in volume from 80-100 cubic feet and in the level of radiation. The radioactivity of sample shipments varied from 1.79 millicuries to 100 millicuries.

Tri-State Motor Transit, one of the largest shippers in the country of radioactive materials, is also located in the State of Missouri (Joplin, Missouri). Tri-State handles highly radioactive spent fuel shipments. However, most of their shipments are routed around the state because the weight limits for trucks on Missouri highways prevent Tri-State from transporting their 105,000 pound loads on Missouri highways.

Radioactive Wastes

Low-level radioactive wastes are being or have been dumped at various locations in the state. The known disposal sites are:

1. The West Lake Landfill and Latty Road sites in St. Louis County.
2. Four pits and a quarry located at the Weldon Springs complex in St. Charles County. These sites are owned by ERDA and the Army, and they contain a considerable amount of waste in an uncertain state of decay.
3. Sinclair Farms where low-level waste from the University Research Reactor at Columbia are buried.

Recently, some incidents at some of these sites have brought the disposal procedures and potential hazards of this dumping to the attention of Missourians. Among those are:

1. Problems at the Weldon Springs complex in St. Louis in 1976.
 - a. Both the Missouri and Mississippi Rivers were receiving low-level radiological contamination from surface streams flowing from the radioactive waste pits at the complex.
 - b. The majority of the buildings and structures at the complex were still in need of decontamination before they could be released for public use. Three of these buildings could not even be released after approximately \$3 million was spent decontaminating them.
 - c. Radiological contamination had migrated beyond the first fence-line of the site at at least two locations.

2. Confusion over the 1973 dumping of 9,000 tons of radioactive material in the West Lake Landfill at St. Louis.

These incidents revealed several interesting facts about disposal procedures. First, the sites do not have to be licensed, nor does the Nuclear Regulatory Commission issue permits for many types of sites. In fact, they had not issued permits for any low-level burial sites in Missouri prior to these incidents. Secondly, a great deal of this waste material is buried in large trenches from which the wastes migrate into the surrounding area if soaked by large amounts of water. This poses problems since some of these wastes take 250,000 years to reach a nonhazardous status. Finally, the monitoring of those sites which are licensed is highly questionable. For example, in dealing with these cases, it was discovered that detection standards for determining when the migration of radioactive materials has reached unacceptable health and safety levels were practically nonexistent.

Radiographic Equipment

There are approximately 530 flourosopes and 6,000 x-ray machines in the State of Missouri. These machines, if not properly maintained, can expose people to damaging doses of radiation.

In State Programs

The most extensive radiological protection activities in the state are the x-ray inspection program and the air and water monitoring program. These programs are housed in the Department of Health, Bureau of Radiological Health whose staff consist of two inspectors and an acting director.

The Bureau of Radiological Health's performance in these programs is mixed. Their air and water environmental programs seem to be adequate. The air-sampling system, part of the National Radiation Alert Network, operates with 24-hour samples and one 72-hour sample collected on a weekly basis. The samples are checked for gross beta radioactivity. The water-monitoring program consists of measuring the concentration of gross alpha and beta radioactivity in samples from 25 locations. These samples are taken at the water supply of individual locations. Samples are also sent in on a bi-monthly basis by 14 interstate water suppliers. Measurements are made on levels of radium, strontium 90, gross alpha and beta radioactivity in the samples by the Idaho Falls Laboratory of NRC-ERDA.

In contrast, significant problems remain with the x-ray program. Approximately 27 percent of the state's 6,000 x-ray machines are inspected infrequently, if at all. When the machines are inspected, they are usually only inspected once every two years. This falls very short of the twice per year inspection frequency recommended by x-ray manufacturers. Moreover, the machines which are inspected most frequently, i.e., those in hospitals, are the machines which are least likely to be in need of inspection since hospitals can often afford maintenance contracts with the manufacturer, while other users cannot.

Other radiological activities are minimal. The Division of Health is equipped to evaluate the need for decontamination in case of radiation accidents, but it is not equipped to monitor radiation emissions, to treat victims, or to undertake decontamination procedures. This limits the Division of Health to a radiation accident plan which consists mostly of a list of the agencies to contact.

Most of these inadequacies can be attributed to insufficient funds. It is estimated that a budget of approximately \$1,390,000 is needed in order for Missouri to have an adequate radiological protection program. The budget for the past three years has fallen far short of this. In FY '75, it was about \$51,000; in FY '76, \$57,000; and in FY '77, it was \$61,000. This level of expenditure is below the national average and places Missouri in the bottom five states on total and per capita expenditures for radiological protection activities.

Conclusions

Many unanswered questions as to the long-term effects of human exposure to radiation and the possibilities of massive releases of radioactivity into the air, water, or soil by Nuclear Power Plants and/or related sources has prompted much recent concern.

The problems in Missouri mirror those found nationwide. As "hard" information becomes available, a greater risk analysis will be developed. However, until such time the following goals are being advocated as minimum guides for health policy establishment vis a vis radiation safety.

Goals, Objectives, and Actions

GOAL: ALL MEDICAL USES OF RADIATION SHOULD BE LIMITED TO THE MINIMUM EXPOSURE LEVELS CONSISTENT WITH REQUIREMENTS OF THE PARTICULAR PROCEDURE AS ESTABLISHED BY THE AMERICAN COLLEGE OF RADIOLOGY.

GOAL: RADIOACTIVE WASTES AND SPENT FUEL FROM NUCLEAR POWER PLANTS SHOULD BE DISPOSED OF IN SUCH A WAY THAT ALL RISK TO PRESENT AND FUTURE GENERATIONS IS MINIMIZED.

GOAL: RISKS TO CITIZENS FROM INTER- AND INTRA-STATE SHIPMENTS OF RADIOACTIVE MATERIALS SHOULD BE MINIMIZED.

OBJECTIVE 1: By 1981, comprehensive regulation governing shipments of radioactive material should be developed. (The Federal Government, with input from the states, should develop these regulations. However, appropriate state agencies such as the Department of Natural Resources and the Division of Health should be encouraged to express their concern on lack of federal action.)

GOAL: TO MAINTAIN THE LOWEST PRACTICAL LEVELS OF NUCLEAR RADIATION IN MISSOURI.

OBJECTIVE 1: By 1981, the Department of Natural Resources should adopt a statewide policy encouraging reduction of reliance on nuclear power, in favor of conservation and the use of safer energy sources.

GOAL: APPROPRIATE RESEARCH TO DETERMINE THE EFFECTS OF LOW LEVEL RADIATION SHOULD BE ENCOURAGED AND SUPPORTED.

GOAL: REGULATIONS SHOULD BE ENACTED TO INSURE THAT RADIOFREQUENCY FIELDS** IN BOTH THE OUTDOOR AND INDOOR ENVIRONMENT ARE KEPT AT SAFE LEVELS.

** Radiofrequency fields are generated by microwave ovens, CB radios, T.V.s, and other electronics.

6. Summary of Overall Findings and Preferred Policy Direction

The thrust of the Environmental Health component of this year's State Health Plan is to delineate the basic parameters on which to build a more comprehensive approach toward health and the environment.

Both the overall findings and the policy direction as advocated are summarized first in general nature immediately below and then by individual sections. Where action steps or goals can be established they are included as part of the individual section conclusions.

1. We are beginning to recognize the hazards of an unhealthy environment.
2. Traditionally we have been concerned with care after the fact, not with detection of cause or prevention.
3. If we continue to devote our full attention to reacting to medical crises, we shall never reach a point in which these crises can be diminished through planned environmental management.
4. Our perspective on environmental health suggests that it should be viewed as a complement to personal health. This means that the environment must be evaluated in terms of the physiological and psychological responses of man to the physical, chemical, and biological attributes of the environment.
5. We propose to use an approach that interjects the pattern of modern illness as a population based syndrome which results from options and opportunities available to populations through policies determined by public as well as private organizations.
6. A population and policy oriented planning approach reflects not only philosophical concerns but also an economic imperative in that escalating costs of current traditional strategies are reaching their political and economic limits.
7. This ecological planning approach would aim at making changes in environmental and socioeconomic conditions which would offer more health promoting and fewer health damaging options.
8. The implications are that the SHPDA/SHCC energies would be directed toward policy decisions and directions within state government. A shift in only one or two policy areas could have far reaching effects on health status.

9. Constraints imposed by resources, time, and the lack of a clear mandate mitigate against SHPDA/SHCC "taking on" the total environmental sphere. Consequently our concern will not be with environmental quality as such but rather with how the environment affects the health of the people of Missouri.

Overall Goals

GOAL: BY 1980, THE MISSOURI SHPDA SHOULD ESTABLISH THROUGH COOPERATION WITH APPROPRIATE STATE AGENCIES, AN INTERAGENCY COUNCIL ON ENVIRONMENTAL HEALTH CHARGED WITH COORDINATING AND MANAGING STATE AGENCY ACTIVITIES RELATED TO ENVIRONMENTAL HEALTH.

GOAL: BY 1979, THE PLAN DEVELOPMENT COMMITTEE OF THE STATEWIDE HEALTH COORDINATING COUNCIL SHOULD ESTABLISH AN ENVIRONMENTAL HEALTH TASK FORCE CHARGED WITH ADDRESSING BOTH ENVIRONMENTAL AND PREVENTIVE AREAS OF CONCERN.

ENDNOTESEnvironmental Health

NOTE: Throughout this section the authors have made liberal use of the reference material cited at the end of this section.

¹Committee on Environment, American Public Health Association, "Environmental Factors in Health Planning," American Journal of Public Health, Vol. 58, No. 2, February 1968.

²DHEW, Public Health Service, Environmental Health Planning Guide, Washington, D.C.

³Community Health Incorporated, George Olson, M.R.P., "What of Environmental Health Planning," 1970.

⁴St. Louis Post Dispatch, Sunday, August 27, 1978.

⁵Carl Marienfield in "Position Paper: Environment and Good Health," Governor's Advisory Council for Comprehensive Health Planning, Jefferson City, Missouri, September, 1976, pp. 1-2.

⁶Ibid., p. 2.

⁷Missouri SHPDA, "Progress and Challenges in Health and Health Care in Missouri," August, 1978.

⁸Eric Eckholm, Picture of Health, Environmental Sources of Disease, Worldwatch Institute, Washington, D.C., 1977.

⁹Op.cit., Progress and Challenges in Health and Health Care in Missouri.

¹⁰Op.cit., Eric Eckholm.

¹¹Ernest L. Wynder, "Cancer Research," November, 1978.

¹²J. Martin Brown, "Health Safety and Social Issues," in W.C. Reynolds, The California Nuclear Institute. Stanford University Institute for Energy Studies, 1976 and W.H. Mellett and A.C.B. Richardson, "Estimates of the Cancer Risk Due to Nuclear Electric Power Generation," Environmental Protection Agency, Washington, D.C., October, 1976.

¹³Op.cit., Eric Eckholm.

¹⁴Environmental Protection Agency, DHEW, "Effects of Chronic Exposure to Low Level Pollutants in the Environment," Washington, D.C., 1977.

¹⁵(Testimony of Ad Hoc Environmental Carcinogenesis Council to the Board of Missouri Cancer Programs," Dr. Richard Leopky, June 22, 1978.)

¹⁶Eighth Annual Report of the Council on Environmental Quality, Environmental Quality, December, 1977, p. 256.

¹⁷Op.cit., Eric Eckholm.

¹⁸Missouri Department of Natural Resources, "Air Quality Report for 1978."

¹⁹Op.cit., Environmental Health Planning Manual

²⁰Op.cit., Environmental Health Planning Manual.

²¹E. Lazor, R. Jestoni, and A. Giles, U.S. Environmental Protection Agency, "The Potential for National Health and Environmental Damages From Industrial Residue Disposal," presented at the National Conference on Disposal of Residues on Land, September 15, 1976.

²²Op.cit., Environmental Quality, November 1977.

²³DHEW, Human Health and the Environment; Some Research Needs, Washington, D.C., December, 1976.

²⁴Ibid.

²⁵Op.cit., Human Health and the Environment.

²⁶Op.cit., Eric Eckholm.

²⁷Op.cit., Eric Eckholm.

²⁸Op.cit., Eric Eckholm.

²⁹Op.cit., Eric Eckholm.

³⁰Op.cit., Eric Eckholm.

³¹Op.cit., Eric Eckholm.

³²Op.cit., Eric Eckholm.

³³Priscilla Laws, M.D., "X-Rays More Harmful Than Good?" Rodale Press, Ammaus, PA, 1977.

³⁴"East-West Journal," October, 1978.

³⁵Op.cit., Eric Eckholm.

Bibliography of Major Publications

Eric Eckholm, Worldwatch Institute, Picture of Health; Environmental Sources of Disease, Washington, D.C., 1977.

DHEW, Human Health and the Environment, Washington, D.C., Washington, D.C., 1976.

Eighth Annual Report of the Council on Environmental Quality, Environmental - 1977, Washington, D.C., December, 1977.

"Proceedings of the National Conference on the Environmental and Health Care Costs," August 15, 1978.

DHEW, Report of the Technical Consultant Panel to the United States National Committee on Vital and Health Statistics, "Statistics Needed for Determining Effects of the Environment on Health," Hyattsville, MD., July, 1977.

American Society of Planning Officials, "Health Planning and the Environment; A Preventive Focus," March 1974.

Malcom Fitzpatrick, Environmental Health Planning, Ballinger, Cambridge, Mass., 1978.

DHEW, "Environmental Health Planning Guide," Washington, D.C., 1970.

SECTION 3.4
PREVENTION AND DETECTION SERVICES
INDIVIDUAL HEALTH PROTECTION SERVICES



I. INDIVIDUAL HEALTH PROTECTION SERVICES

A. IMMUNIZATION

Introduction

The purpose of an immunization program is to prevent the occurrence and transmission of communicable diseases. Unprotected individuals may suffer serious consequences including deafness, blindness, mental retardation, and even death. "The primary function of the Bureau of Immunizable Diseases is to provide a comprehensive delivery system for immunization against disease as a service to all communities of the state. This includes all residents of Missouri with the major emphasis on the 375,000 pre-schoolers and 1,105,343 school age children."¹

Desired System

Availability

The integrated and comprehensive immunization delivery system must be capable of making immunizations available to every non-immunized child in Missouri.

Accessibility

Cost should not be a barrier to the accessibility of immunization.

Acceptability*

Quality

A comprehensive immunization program should ensure for immunization against polio, rubeola (measles), rubella, DPT, and mumps. Within a comprehensive immunization system, emphasis should be placed on providing immunization services, conducting effective assessment of immunization levels among important subpopulations, implementing sensitive surveillance systems to detect disease outbreaks, and developing an effective response mechanism for outbreaks of disease or for recently identified inadequately immunized subpopulations.

A comprehensive immunization program should also include an information/education component. Parents should be motivated to obtain immunizations for their children and awareness of the importance of appropriate

* = will not be addressed at this time.

and timely immunizations on the part of physicians and other health professionals should be reinforced. Parents should be provided with appropriate information on the risks and benefits of immunization.

Cost*

Continuity

Since some immunizations are given in a series, it is very important that there be follow-ups to ensure that all patients receive the full series.

Comparative Analysis

The current state immunization law (RSMo 167.181) requires that all children in grades kindergarten through twelve be totally immunized for DPT, polio, rubeola (measles), and rubella or have filed a statement of exemption (which is permitted for medical, religious, and/or philosophical objections).** Immunization against mumps is not required.

Availability

When it is determined through school audits that immunization levels are low, the Division of Health staff offers free immunization clinics for the required immunizations. "Logistically, one-half (1,409) of the schools in the state can realistically be serviced each year."²

Accessibility

Except for mumps vaccine, immunizations are accessible to school age children in the State of Missouri.

Cost*

Quality

Table 3.4-1 presents data on the recent immunization rates within Missouri. As can be seen, immunization rates have been increasing for all five categories.

**These exemptions account for less than one percent of the student body.

TABLE 3.4-1: SELECTED DISEASES IMMUNIZATION RATES IN MISSOURI
IN GRADES K-12 FOR SCHOOL YEARS 1973-74 THROUGH 1977-78³

SCHOOL YEAR	DPT	POLIO	RUBEOLA	RUBELLA	MUMPS
1974-75	77.0%	71.0%	69.0%	65.0%	31.0%
1975-76	83.0	81.0	78.0	75.0	34.0
1976-77	83.6	82.3	80.5	78.1	38.5
1977-78	88.5	87.7	91.7	89.6	38.3**
	5.6*	5.9*			
77-78 Total	94.1	93.6	91.7	89.6	38.3

*In progress - these children were adequately immunized at time of reporting. A second dose is required to complete immunization.

**Mumps do not have to be reported. Therefore, this number is low. The Division of Health estimates mumps immunization is probably in excess of 50 percent.

The statewide immunization enforcement campaign undertaken by the Missouri Division of Health was instrumental in attaining the high degree of compliance in 1977-78. In that school year, all parents of school age children were required to present a record of immunization for each child or the child would be removed from school.

Each year in Missouri, many children contract mumps and are absent from school. In some schools, absenteeism is so great that school has to be canceled during the epidemic. While in most cases mumps is not a serious illness, it can result in severe after effects such as sterilization of both males and females. Through proper precautions and immunization, this illness could be prevented.

As can be seen in Table 3.4-1, the immunization rate for mumps is low. This number is somewhat misleading since schools are not required to collect these data and many do not have appropriate records. Therefore, the numerator contains only those students in school completing the form, while the denominator contains all students enrolled in school. Maximum estimates suggest that slightly more than fifty percent are immunized.⁴ According to the Missouri Division of Health, there has been a steady increase in the number of kindergarten students immunized for mumps. The level of immunization decreases with the increasing grade level of the student.

Immunization activities for preschool children are concentrated in captive audiences such as licensed day care centers and Head Start Programs. For preschool children, the Division of Health program concentrates its efforts in these actions: 1) educational efforts directed at the licensed day care center children (37,844) and all Head Start Program children (10,073); 2) mailings to the state's 67,412 new births encouraging immunization; and 3) education of the public and private health providers as to the importance of appropriate and timely immunizations.⁵ The immunization status of the preschool population is as yet unmeasured.

Continuity*

Acceptability*

Problem Description

If the Division of Health is to maintain the high degree of success experienced in 1977-78, then they must receive adequate funding (federal and state) to establish a permanent mechanism. This mechanism must ensure that comprehensive immunization services will be easily available to nearly 100 percent of the children.

The Division of Health, Bureau of Immunization, had intended to push for mumps immunization in 1978-79 for all school age children. However, the Federal emphasis has shifted from making funds available for all ages to supporting the full immunization of preschool and children entering school for the first time. Cost is a barrier to further implementation. The current cost to the Division of Health of combined measles, mumps, and rubella vaccine is \$2.62 per dose and mumps vaccine alone is \$1.60 per dose. The cost to private physicians is much higher. Without a law requiring mumps immunization and/or adequate funding, it will be difficult for the Bureau of Immunization to raise the level of children immunized against mumps to the same level as other immunizations.

Goals, Objectives, and Actions

GOAL: TO ENABLE MISSOURI'S POPULATION TO HAVE ZERO INCIDENCE OF IMMUNIZABLE DISEASES.

OBJECTIVE 1: By 1983, immunization rates for polio, DPT, rubeola, and rubella for school age children (K-12) should be at least ninety-five percent.

Recommended Action 1: Adequate funding should be available to the Division of Health to enable them to achieve and maintain a high level of immunization.

Recommended Action 2: The Division of Health and local school districts should continue to be supported by the Office of the Attorney General in enforcing Missouri's immunization statute.

OBJECTIVE 2: By 1983, the immunization rate for mumps for Missouri's school age children (K-12) should be at least ninety percent.

Recommended Action 1: Missouri's legislation on immunization (RSMo 167.181) should be revised by 1980 to also require immunization against mumps.

Recommended Action 2: Adequate funding should be provided to the Missouri Division of Health for an intensive statewide mumps inoculation program.

Recommended Action 3: By 1983, all schools in Missouri should be collecting immunization records of their students against mumps.

B. WELL PERSON MAINTENANCE

Introduction

"... Marvelous though health care services are in Canada in comparison with many other countries, there is little doubt that future improvements in the level of health of Canadians lie mainly in improving the environment, moderating self-imposed risks, and adding to our knowledge of human biology." (Lalonde, New Perspectives)⁶

Our present health care system is really an illness system. "Gomez decries this situation by terming as 'ludicrous' our propensity as a society to spend so much on transplants - 'temporary patch-ups on already worn frames' - and 'so little on teaching people to live so that their own hearts, arteries, and other organs can serve them through a reasonable span.'"⁷ We educate for illness and reimburse for illness but do little of either for wellness. Don Ardell, in his book High-Level Wellness⁸ describes a continuum of wellness to illness with most of us being at around the midpoint. We can choose to move in either direction - toward illness or toward wellness - by our choice of life style.

Providers of health care are in a unique position to educate people toward wellness. They impact on people at a point when they are conscious of their wellness-illness state. They have knowledge that is useful in making life style choices (nutrition, exercise). Yet physicians, hospitals, and other providers of health care have traditionally given little time or attention to health education.

Desired System

Availability

Health promotion services, including health education, should be available for every person in primary and acute care settings.

Accessibility

Accessibility is related to the distribution of health providers and the costs of preventive care. (See Financial Incentives for a discussion of reimbursement).

Cost

The cost of promotion and prevention services must be weighed against the long-range benefits. Currently money going to preventive health measures is 2 to 2.5 percent of the total budget for health in the United States.⁹

Acceptability

Health education programs should be designed to fit the educational level and cultural background of the targeted person or group.

Continuity

Health education should be provided at all stages of wellness through illness. In the primary care setting, preventive life style education can assist in averting the onset of disease and patient education is an essential part of the treatment process. In the hospital setting, as in primary care, patient education is an important part of treatment.

Quality

Health promotion programs should exist at all levels within the health care system. Emphasis in programs should be placed on self-responsibility, encouraging a life style which fosters wellness, and treating the whole person or "holistic health." "Holistic" means "viewing a person and his/her wellness from every possible perspective . . . treating the person, not the disease."¹⁰

Primary prevention (before the onset of disease) and early diagnosis (presymptomatic) should be provided in outpatient settings. This should include age-specific screening, life style assessments, and family history combined with education for the prevention of future health problems. Secondary prevention in outpatient and acute care settings should be an integral part of the treatment. Hospitals should include trained health educators as a part of their staff to plan patient education programs to be carried out by the actual providers of health care.

Comparative Analysis

Availability

Primary prevention programs exist in very few physician's offices. Patient education (secondary prevention) is somewhat more prevalent in physician's offices and especially in hospitals, although the amount is difficult to assess in the absence of formal programs.

Accessibility* (See Financial Incentives)

Cost*

Acceptability

In many patient education programs, the educational level and background of the patient are not taken into account. There is no assessment of whether the patient understands the relevance or importance to his/her health of what he/she is being told. "The reliability of self-medication is relevant to the understanding of the pathological process . . . Patients who did not understand their illness told their interviewer that their physicians either did not tell them about their disease, or if they did, that their explanation was too technical . . . There are obvious communication difficulties."¹¹ In the above study, 20 of 27 patients (75 percent) with an eighth-grade education or more took digitalis as often as prescribed, compared to 13 of 33 (39 percent) who were less educated.

Continuity

Most health education is directed toward patients after the onset of illness. Education to prevent illness is not common.

Quality

Health promotion activities currently are confined almost entirely to patient education and most of that occurs in hospitals. Medical schools do not place much emphasis on prevention and schools of nursing, while somewhat more oriented toward health education, still place most of their emphasis on clinical skills (illness training).

The large hospitals in the state offer some patient education (most often for diabetes and heart disease), prenatal classes, employee health education, and to a lesser extent, community health education (smoking and weight loss clinics). Smaller hospitals often have programs to educate diabetes and heart patients. The existence of a department of health education (mainly in large hospitals) usually facilitates a good health education program. Most health education in primary care settings and hospitals, is done informally by physicians and nurses and, therefore, is difficult to assess.

The University of Missouri has recently opened a Health Maintenance Clinic. "Visitors to the . . . clinic have one characteristic in common: they are not sick."¹² An interdisciplinary team including a doctor, nurse practitioner, social worker, nutritionist, health educator, and exercise physiologist assess, advise, and educate a patient about his/her health status. If a problem is discovered in the two session assessment, then the person is referred for treatment. Teaching the well patient to avoid health problems is a major emphasis of the program. At present, the clinic (or programs like it) are extremely rare in Missouri.

Problem Description

1. Training programs for health care providers (medical schools, nursing schools) are illness rather than prevention oriented.
2. Relatively few hospitals have departments of health education. In the absence of some kind of formal designation, health education services are difficult to assess.
3. Even fewer hospitals hire health educators to plan programs and train the people who actually interact with patients. Providers know about content of health education, but health educators have the skills to know how to present it.
4. Health educators are being trained in Missouri but not being hired in Missouri. Most of them take positions out-of-state.
5. Reimbursement for health promotion is almost non-existent.

Goals, Objectives, and Actions

GOAL: TO REDUCE THE INCIDENCE OF PREVENTABLE DISEASE THROUGH THE PROVISION OF HEALTH PROMOTION PROGRAMS IN PRIMARY AND ACUTE CARE SETTINGS.

OBJECTIVE 1: By 1983, every hospital in Missouri should have developed a patient education program.

Recommended Action 1: Secondary care hospitals should formally designate a section within the hospital to carry out health education activities.

Recommended Action 2: Tertiary care hospitals should have professionals designated for health education within the hospital.

Recommended Action 3: The Missouri Hospital Association should offer training, assistance in designing programs, and materials for member hospitals.

Recommended Action 4: Patient education programs should be reimbursable by third-party payors.

OBJECTIVE 2: By 1983, all hospitals should offer community health education programs.

Recommended Action 1: The SHPDA should work with the Missouri Hospital Association to more clearly define what health education programs currently exist and what potential exists for their expansion, improvement, and reimbursement by third-party payors.

Recommended Action 2: Hospitals should assess the most common preventable health problems in their service area and offer programs designed to prevent them.

OBJECTIVE 3: By 1984, primary care settings should be providing a range of health promotion programs including well person maintenance, screenings, early diagnosis, and health education.

Recommended Action 1: Health Maintenance Organizations should include a fully developed health promotion program and should include a health educator on their staff.

Recommended Action 2: Primary care physicians should develop a means of offering health promotion programs to their patients, either through direct provision of services or by referral to a health maintenance clinic.

Recommended Action 3: Prevention of illness education should be increased in Missouri's medical schools.

OBJECTIVE 4: By 1984, health maintenance clinics should be accessible to everyone in the state.

Recommended Action 1: The medical schools should develop model projects throughout the state.

Recommended Action 2: Hospitals should be considered as potential locations for such clinics.

OBJECTIVE 5: Adult health education programs should be expanded to include non-medical settings (see Section 3.4, sub-sections A. 1. Comprehensive School Health Education - Objective 6; 2. Health Education in Business and Industry; 5. Health Education Services by Voluntary Health Associations; and B. 2. Media.)

Recommended Action 1: Additional settings for adult health education programs should be explored.

ENDNOTES

¹Missouri Division of Health, Division of Health Program Statements, July, 1978.

²Ibid.

³Unpublished data, Missouri Division of Health, Bureau of Immunizable Diseases.

⁴Ibid.

⁵Division of Health Program Statements, op.cit.

⁶Lalonde, Marc, "A New Perspective on the Health of Canadians: A Working Document," Ottawa: Government of Canada, April, 1974, p. 18.

⁷Ardell, Donald B., "From Omnibus Tinkering to High Level Wellness: the Movement Toward Holistic Health Planning," American Journal of Health Planning, Vol. 1, No. 2, October, 1976, p. 19.

⁸Ardell, Donald B., High Level Wellness, Rodale Press, 1977.

⁹Preventive Medicine: USA, A Task Force Report sponsored by The John E. Fogarty International Center for Advanced Study in the Health Sciences, National Institute of Health and the American College of Preventive Medicine, New York, 1976, p. 6.

¹⁰Ardell, op.cit., p. 5.

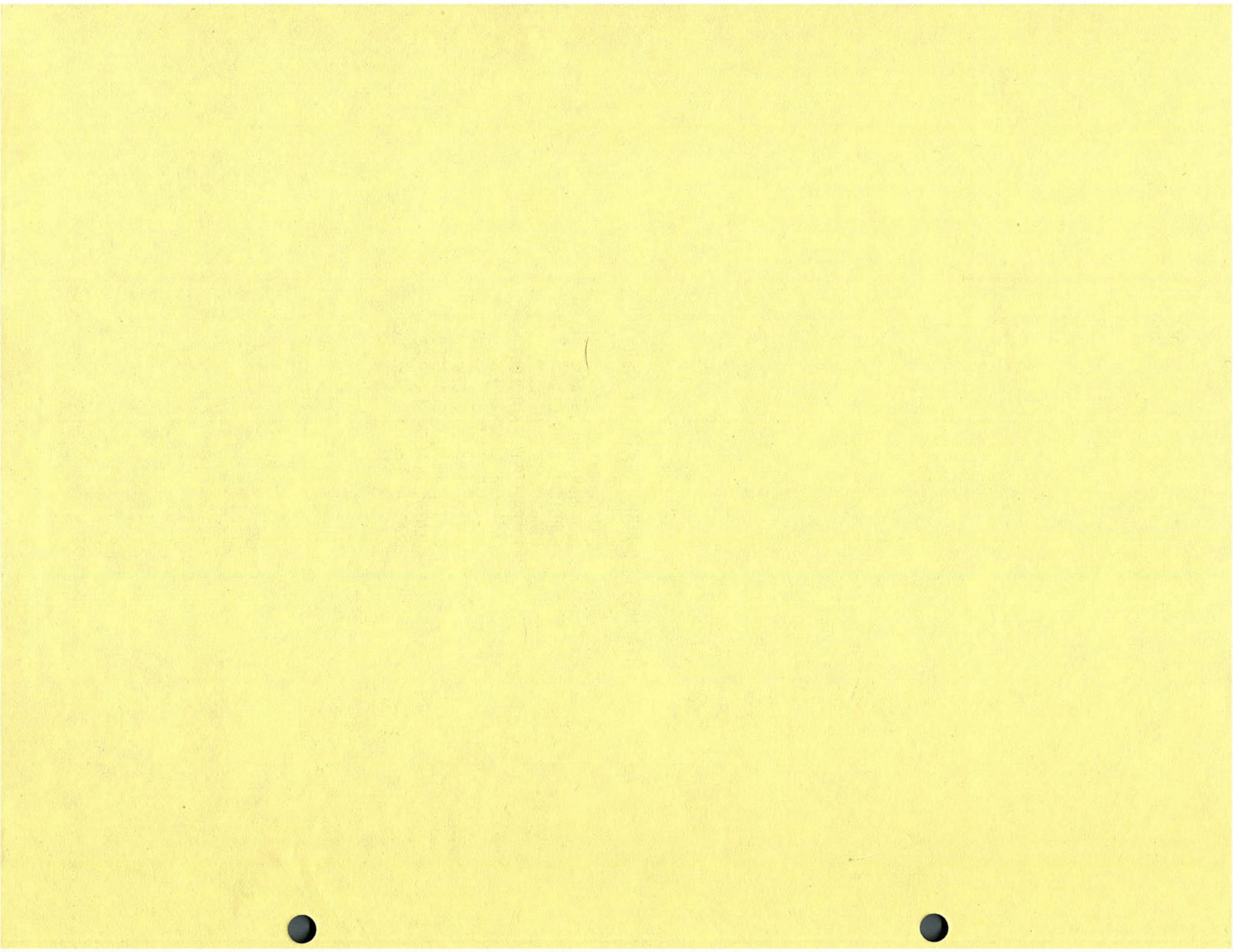
¹¹Preventive Medicine: USA, op.cit., p. 25.

¹²Karen Wallensak, "Clinic Aids the Healthy," Article in the Columbia Missourian newspaper.

SECTION 3.5

DIAGNOSTIC AND TREATMENT SERVICES

INTRODUCTION
MATERNAL AND INFANT HEALTH
SURGICAL SERVICES
DIAGNOSTIC RADIOLOGY
THERAPEUTIC RADIOLOGY
CLINICAL LABORATORY
EMERGENCY MEDICAL SERVICES
OUTPATIENT SERVICES
DENTAL HEALTH SERVICES
MENTAL HEALTH SERVICES
GENERAL MEDICAL SERVICES



INTRODUCTION

The Diagnostic and Treatment Services section addresses nine secondary service categories as defined in the taxonomy. These service categories are analyzed in varying degrees of specificity, and where further analysis is demanded, reference will be made to areas of future consideration.

The National Health Planning Guidelines will also be analyzed here as a subsection of the secondary service categories. Where the analysis and/or adjustments to the National Guidelines are not established in greater specificity than a statewide basis, analysis by the local HSA will have to be performed in order to justify any exceptions and/or adjustments.

I. MATERNAL AND INFANT HEALTH

Introduction

A continuum of services is necessary to impact at key points in improving the health status of women and their children through the cycle which begins prior to conception and continues through childhood. Each service - family planning, prenatal care, labor and delivery, neonatal care, and pediatric care - is an essential part of the continuum of care as delineated in the Maternal and Child Health status section.

A. Family Planning

Introduction

A quality statewide network of family planning could impact upon prematurity, infant mortality**, fetal mortality***, maternal mortality, the incidence of abortions, out-of-wedlock births, and birth defects. Non-medical benefits of family planning include the opportunities for families and individuals to maintain or achieve financial self-sufficiency and to provide adequate psychological support to family members because of their ability to limit or space their children.

The medical services received in a family planning clinic go beyond merely advice or treatment for the control of reproduction. Although not all medical services are offered in a family planning clinic, they constitute a comprehensive medical care plan in that patients may receive education, advice, and referral for screening, detection, prevention, or treatment for the maintenance of good health, with particular attention to the reproductive system.

A major health problem in Missouri is the increase in teenage pregnancy. Nationally, approximately one-third of the legal abortions were performed on women under twenty.¹ As shown in Table 3.5-1, fetal and infant mortality rates are much higher for infants born to very young females. During 1976, the infant death rate for babies born to females under the age of twenty was 21.0 per 1,000 live births compared to 15.0 per 1,000 live births for babies born to females between the ages of twenty and twenty-four. The fetal death rate was 15.3 per 1,000 live births for females under twenty compared to 9.4 per 1,000 live births for females between the ages of twenty and twenty-four. For females aged twenty-five to twenty-nine, the rate is even lower at 8.9 deaths per 1,000 live births. For females over the age of thirty-five, infant and fetal death rates again rise (see Table 3.5-1).

* = will not be addressed at this time.

**Infant mortality is defined as the number of deaths occurring from birth to one year.

***Fetal mortality is defined as the number of deaths occurring from 20 weeks gestation to birth.

TABLE 3.5-1
 INFANT AND FETAL MORTALITY BY AGE OF MOTHER: MISSOURI 1976²

AGE OF MOTHER	LIVE BIRTHS	INFANT DEATH RATE*	FETAL DEATH RATE*
Under 15	263	30.4	38.0
15-17	5,262	24.5	17.1
18-19	7,766	18.3	13.3
20-24	23,710	15.0	9.4
25-29	20,764	11.8	8.9
30-34	7,948	12.7	9.8
35-39	2,465	18.7	20.3
Over 39	605	16.5	19.8
All Ages	68,783	15.1	10.9
*Rate is deaths per 1,000 live births.			

The central health issues is not so much the moral issue of sexual activity among teenagers, but its consequences, including pregnancies, venereal disease, and abortions. In teenage pregnancies, not only is the risk to the infant greater, but the risk to the mother is also greater. Studies have shown that "pregnant adolescents have higher rates for toxemia, prolonged labor, premature delivery, pelvic disproportion, and cesarean section than more mature women, and therefore, require more intensive maternity care."³ Along with these direct medical problems, unintended pregnancies among teenagers result in many social problems including higher incidence of abortions, forced marriages, illegitimate births, poor nutrition, successful or attempted suicides, child abuse, and formal educational dropouts. Many of these problems lead to future demands upon the health care system.

During 1976 in Missouri, 13,865 (16.7 percent) of the 83,398 pregnancies were terminated by abortions. As Table 3.5-2 shows, the rate per 1,000 live births varies widely with the age of the mother, however, those under the age of fifteen had a disproportionately higher rate of pregnancies terminated by abortion. In this age group, live births as a percent of total pregnancies is very low (only slightly higher than 50 percent), thus indicating the need for improved prevention strategies and improved services.

TABLE 3.5-2
MISSOURI RESIDENT ABORTIONS DURING 1976 BY AGE OF MOTHER⁴

AGE OF MOTHER	LIVE BIRTHS	ABORTIONS	
		NUMBER	RATE*
Under 15	263	237	901.1
15-17	5,262	1,943	369.3
18-19	7,766	2,498	321.7
20-24	23,710	4,594	193.8
25-29	20,764	2,413	116.2
30-34	7,948	1,161	146.1
35-39	2,465	691	280.3
Over 39	605	328	509.1
All Ages	68,783	13,865	201.6
*Rate is number of abortions per 1,000 live births.			

Teenage pregnancy is not a problem which can be solved or even reduced by ignoring its presence. However, it could be decreased through better educational and preventive services, and its negative impact (e.g., forced marriages, suicides, and child abuse) on the teenager who does become pregnant could be reduced through better medical and social services. Studies⁵ have shown that many teenagers are either uninformed or misinformed concerning the basic biological functions of their bodies. If they are expected to assume responsibility for the consequences of their actions, they need to receive reliable, realistic information from non-judgmental, sensitive sources.

Desired System

Availability

Missouri should have a network of organized family planning programs to serve the needs of 100 percent of the low and marginal income adults and adolescents. Family planning services should be available in every county in Missouri.

Accessibility

Cost should not be a barrier to receiving the full range of services. Teenagers are at high risk for unintended pregnancy. Because they often have limited financial resources, and often resist seeking services concerning reproduction from private physicians,⁶ they should be included as an important target group of an organized family planning

network. Hours should be flexible enough to meet local needs and services should be located within a reasonable travel time of every woman in need.

Cost

In 1975, it was estimated that between \$11.4 million and \$13.7 million would have been required to subsidize care for all low and marginal income women in need of family planning services in Missouri, if women were included who were paying out of pocket for private physician's services. This represented increases over the actual \$4 million expenditures in 1974 of \$7.4 - \$9.7 million.⁷ This figure would be correspondingly higher if estimated in 1979. Of the \$4 million expenditures in 1974, 84 percent was Federal and 16 percent was from private, state, and local funds.⁸

Acceptability

"Services will be made available in a manner that protects the dignity of the individual. The design of the project's facilities should ensure privacy, confidentiality, and regard for the self-respect and dignity of the served individual during personal interviews, consultations, medical examinations, and treatment."⁹

Quality

Family planning programs within the network should provide the following services:

1. Patient education relating to the range of contraceptive methods including "natural family planning;"
2. Medical services related to contraceptive prescriptions and supplies;
3. Voluntary sterilization;
4. Medical services related to contraceptive complications or problems discovered during screening;¹⁰
5. Referral arrangements with other health care services, welfare departments, and voluntary agencies;¹¹
6. Outreach services/community education; and
7. Social services (i.e., counseling, information on community resources, and follow-up).

Training for all clinic personnel should be provided. Among several content areas training should emphasize the importance of establishing a comfortable, welcoming environment for clients.

Pregnancy counseling services should be provided so that all females, and especially teenagers, have access to means of early determination of pregnancy. These counseling services should provide supportive, non-judgmental information on all options available and should facilitate decision making in the selection of an alternative. Upon confirmation of pregnancy, this service should immediately lead to referral to medical and counseling services.

If the undesired consequences of unintended teenage pregnancy are to be avoided, guidance and basic information relative to unprotected intercourse, contraceptives, and abortions must be provided without discrimination relative to age. Health care facilities and medical, educational, and counseling services available to other individuals should be provided for teenagers where they can utilize these same services without risk of humiliation or invasion of privacy.

IN THE PROVISION OF EDUCATIONAL MATERIAL, a common format is desirable; however, local determination of the design and specific content of the program to fit the maturation level and problems, as well as the philosophy, of their population is essential.

Continuity

Family planning clinics are key agencies in referring patients for additional care. The clinic should be aware of the full range of services in its area and make appropriate referrals as needed. Often the clinic is the first or only point of contact for women in need of a range of medical and social services. The client should be actively involved in the decision about additional services needed.

Comparative Analysis

Availability

According to a report developed by the Alan Guttmacher Institute in May 1975, the estimated number of 'women at risk' in Missouri is 227,856.¹² They reported that "due to the increase in family planning providers in the state, 59.6 percent of the total need is being served."¹³ The Guttmacher Institute defines 'women at risk' as those in childbearing years (15-44) whose incomes are marginal and who are fertile, sexually active, not pregnant or trying to become pregnant.

Among adolescents, 93,800 women aged 15-19 are estimated to be at risk. About 41,900 have low or marginal incomes and were included in the Guttmacher estimates of 227,856. Of the 58 percent of the adolescents in need who remained unserved, 30 percent live in St. Louis City and County according to estimates made in 1974.¹⁴

In Missouri, family planning clinic caseloads have grown from 19,400 in 1968 to 82,000 in fiscal year 1974.¹⁵ The number of family planning clinics has risen dramatically in the last ten years. Family planning programs are operated by many different public and private agencies. "By the end of FY 1974, fifty-four agencies operated at least 144 clinics serving residents of 73 counties (and St. Louis); 41 counties . . . appeared to have no local source of organized family planning services."¹⁶ In 1978, 157 clinics operated in 56 counties.** By July, 1979, the Division of Health plans to open additional clinics which will result in a total of 85 counties with Family Planning programs. The Division of Health and the Department of Health, Education, and Welfare are in the process of working out a formal written agreement to facilitate ongoing coordination between the two agencies' programs.

Accessibility

Family planning clinics must provide services for low and marginal income women as a condition of receiving federal or state funds. They must develop a fee schedule and submit it for approval to the funding agency. Currently, whether or not the state supported family planning clinics provide services to minors*** without parental consent is a matter of *local determination*. This requirement of parental consent before family planning services are provided may act as a deterrent to a program which should offer primary prevention services to the minor population. The "Program Guidelines" developed by the Department of Health, Education, and Welfare for project funding state: "Services will be made available without regard to race, color, national origin, religion, creed, age, sex, parity, or marital status."¹⁷ However, not all clinics receiving federal funds accept teenagers without parental consent.

Cost*

Acceptability*

**Information from the Division of Health: Family Planning Program of the Bureau of Maternal and Child Health.

***A minor is defined as someone under 18 who has not been emancipated (expressed or implied relinquishment by a parent of his parental responsibilities for the care, custody, and control of his child).

Quality

Currently, in Missouri, there is no legislation establishing a statewide family planning network. Missouri also has no law regulating "voluntary sterilization, the dissemination of contraceptive information or the sale, distribution, advertisement, and display of contraceptives."¹⁸ (Oral contraceptives are by prescription and come under RSMo 338.059 which regulates their dispensation.)

The Missouri Division of Health's state plan for Family Planning Services currently provides the following guidelines to be used in the establishment of state-supported family planning clinic services:¹⁹

1. Generally, a clinic can be supported if there are 500 low-income women in need of the services within a feasible travel distance, a physician willing to participate in the program, and either a local agency or community which can recognize the need and bring resources together to meet the problems.
2. Medical Services will be provided by selected physicians with experience in family planning. This fee as well as all expenses will be paid directly by the local unit. The Associate Director of the Section of Medical Care will approve the appointment of clinic physicians. All acceptable methods of contraception including the rhythm method will be provided and/or discussed.
3. Medical services will include a physical examination including pelvic and breast examination. Laboratory tests will include PAP testing, serology, blood pressure, weight, hemoglobin determinations, and urine analysis. Treatment of certain ambulatory conditions is also available. Patients with conditions requiring more extensive treatment will be referred to the family physician and other appropriate sources.
4. Nursing services will be provided. These services will include casefinding and outreach, interviewing, organizing and assisting at clinic sessions, patient follow-up, counseling, and education on an individual and group basis.
5. Social services should be available. Division of Family Services (DFS) caseworkers and all other community resources should be utilized to give support in this area. In every county a DFS caseworker is available to make home visits.
6. Nutritional consultive services will be available.

7. Laboratory services of the local health unit and the state Division of Health, Bureau of Maternal and Child Health, Revised August 15, 1977, will be used as the basis for clinic operations.
8. Standards for Family Planning Health Services, Missouri Division of Health, Bureau of Maternal and Child Health, Revised August 15, 1977, will be used as the basis for clinic operations.
9. In-service education will be planned and provided.
10. Use of volunteers from the community will be encouraged. Their services will include transportation and baby sitting at clinics.

Continuity

For a number of patients, the family planning agency or the health department in which these services are housed may become the 'family physician.' These family planning services cannot meet the comprehensive health care needs of such patients, but the agency's referral services could find resources or develop them to make sure that the patients receive needed services from other sources. Although this may seem like an overextension of the clinic's role, the family planning service must provide these services since often no one else does.²⁰

Problem Description

1. Fifty-three percent of the women at risk in Missouri were still in need of services in 1975. Fifty-eight percent of adolescents in need remained unserved.²¹ While some of this need has since been met, there are still an undetermined number of women in need of family planning services. Therefore, services within the state need to be expanded to meet 100 percent of the need.
2. A major problem encountered in opening additional clinics is often the lack of an available physician to participate. Without a physician, a clinic is not allowed to operate.
3. The foundation of a comprehensive family planning program should be legislation which supports the delivery of such services. This legislation should eliminate the existing restrictive policies which hinder the delivery of services to all persons who need them.

Given the health problems associated with teenage pregnancies, it is important that medical care be provided early in pregnancy; an event which is too often neglected because of fear, ignorance, and/or obstacles encountered in obtaining care.²² The lack of family planning legislation which clearly defines the role with respect to minors may lead to reticence in counseling or prescribing alternatives to younger patients. Currently, there is no such law in Missouri.

4. Realistic family life and sex education needs to be offered within the comprehensive school health education program in grades K-12 which, minimally, provides basic, pertinent information on the sexual maturation of the body; birth control; sexual identity; family interrelationships, causes, treatment, and prevention of venereal disease;** and knowledge of existing services in the area. The Department of Elementary and Secondary Education's K-12 Guide, while providing guidelines for the development of common formats, mandates that local schools be allowed to design the program to fit the maturation level and problems of their particular students.

Goals, Objectives, and Actions

GOAL: TO ENABLE ALL MISSOURIANS TO HAVE ACCESS TO QUALITY FAMILY PLANNING SERVICES TO ENABLE FREE DETERMINATION OF THE NUMBER AND SPACING OF CHILDREN.

OBJECTIVE 1: By 1981, the percentage of unmet need (as determined in 1975) for family planning services should be decreased by 10 percent from 53 to 43 percent.

Recommended Action 1: Missouri's five HSAs, the SHCC, and the Missouri Family Planning Council should work together to determine priority areas of unmet family planning needs.

OBJECTIVE 2: To reduce infant mortality to 12.0 deaths per 1,000 live births (see Health Status, Section 3.2), emphasis will be placed on reducing teenage pregnancy.

**Venereal disease quadrupled among teenagers between 1960 and 1972.

OBJECTIVE 3: By 1983, realistic family life and sex education should be offered as part of an integrated comprehensive school health education program in grades K-12.

OBJECTIVE 4: By 1980, A Guide for Developing a Comprehensive K-12 School Health Instruction Program²³ should be used as a foundation in the development of the family life and sex education component.

OBJECTIVE 5: By 1983, legislation should be passed establishing a legal basis for a statewide family planning network disseminating information relative to voluntary sterilization and contraceptives, especially to minors. Ideally, this law and the supportive policies should include the following:²⁴

- definition of family planning needs and goals;
- establishment of specific operational objectives, such as patients to be served;
- assignment of specific responsibilities to state agencies and detailed plans for implementation developed by agencies;
- provision of sufficient funds and staff to implement the program; and
- provision for monitoring and program evaluation.

Recommended Action 1: The network of preventive family planning services should be accessible to all persons in need.

Recommended Action 2: Pregnancy counseling services should be available to all persons, especially teenagers.

OBJECTIVE 6: The expanded role of nursing practice as defined in the Missouri Nursing Practice Act should be clarified. This should include clarification of whether or not a nurse can work in solo practice and also what he/she can do in the absence of a physician.

B. Diagnosis and Treatment of Prenatal Complications

Introduction

Prenatal care begins at the onset of pregnancy and continues through delivery. Adequate care, begun by the end of the first trimester of pregnancy, combined with a referral program for women at high risk** of poor pregnancy outcome would impact positively on infant and fetal mortality.

Infant and fetal mortality correlate highly with socio-economic status, race, and educational level of the mother. Malnutrition and inadequate prenatal services increase the risk of prematurity, low birth weight, and other complications which result in an increase in fetal and infant mortality and morbidity (particularly mental retardation). Improved maternal and child health services to those areas of the state with a high percentage of high risk mothers (St. Louis, Kansas City, and the Bootheel) are essential in decreasing the infant and fetal mortality rate. Nine of the 16 counties in Region VII identified as being high Infant Mortality Areas (a rate of 22.1 infant deaths per 1,000 live births) are in Missouri.²⁵ Of these nine counties, one is St. Louis City; another is Jackson County (Kansas City); and three are located in the Bootheel (Dunklin, Pemiscot, and Scott). The other four (Howard, Marion, Mercer, and Pulaski) are scattered throughout the state. In general, inner city areas and rural areas with a high poverty level have a high infant and fetal mortality rate.

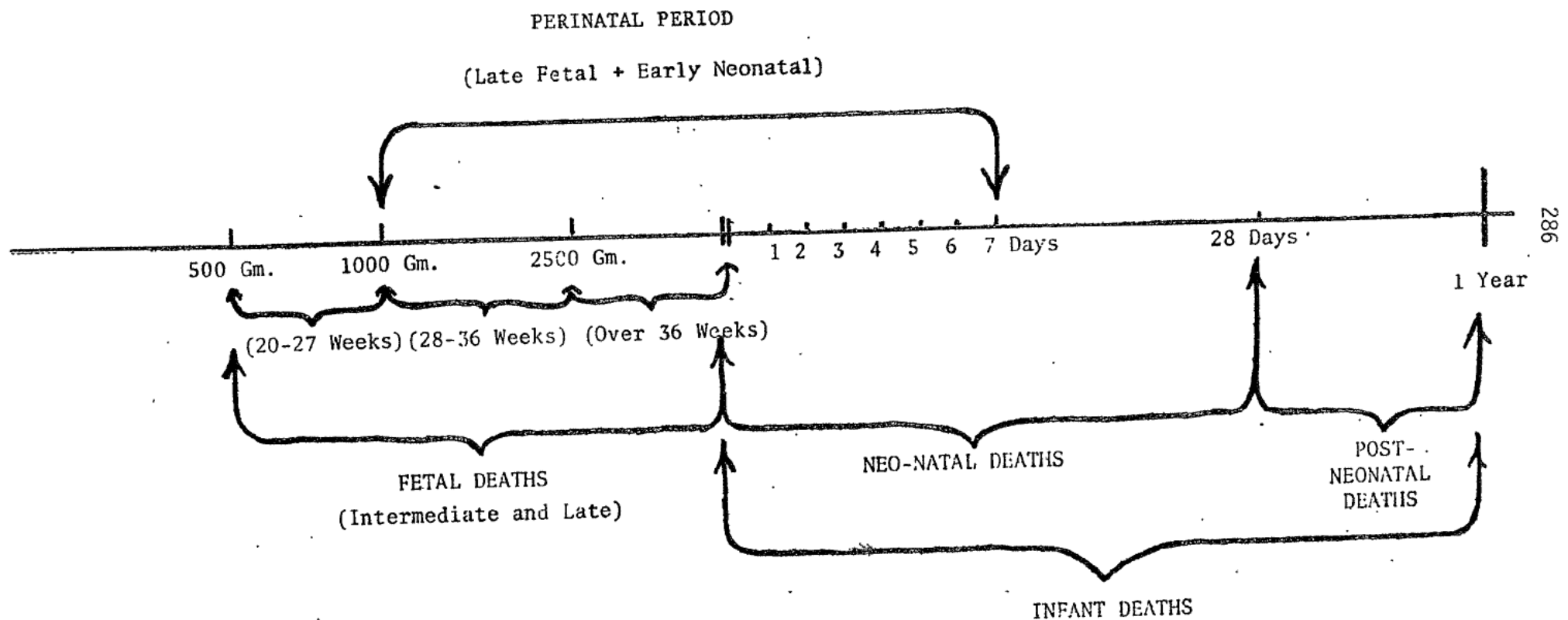
Known public health interventions have their greatest impact during the prenatal and neonatal period. Fetal and infant mortality during this period arises from conditions established before delivery or during birth stress.²⁶ Post-neonatal infant mortality is affected positively by activities other than traditional medical interventions such as raising the standard of living, improving nutrition, and health education.²⁷

Of key importance in the prenatal period is the identification of women at high risk for poor pregnancy outcome. An estimated half-million births each year (one of every seven) in the U.S. are deemed to be at high risk.²⁸ The prevention of poor pregnancy outcome within the prenatal period can avert the need for expensive medical treatment after birth. This may involve informing the mother of health hazards to be avoided during pregnancy, urging the mother to modify hazardous health behaviors, and/or detecting and treating complications during the prenatal period to eliminate or lessen fetal damage.²⁹ Early identification (during the first trimester of pregnancy) and adequate treatment

**Throughout this section, high risk is defined as medical and socio-demographic risk except where definitions are given for specific programs (i.e., Missouri High Risk Maternal and Child Care Program of the Division of Health).

facilities are key factors in improving the outcome of pregnancy. "The introduction of new medical skills and new treatment approaches, coupled with new technologies, has improved dramatically the outlook in many high risk situations."³⁰ Identifying women at risk and making necessary medical care available to them are essential in lowering infant and fetal mortality and morbidity.

Figure 3.5-1
Fetal and Infant Mortality Defined 31



Perinatal care begins in the last trimester of the pregnancy and is carried over to the first twenty-eight days (also classified as the neonatal period) of the infant's life. A perinatal death is one which occurs between 20th week of gestation and the first 28 days of life. A fetal death occurs between 20 weeks of gestation and birth. A neonatal death is one which occurs between birth and the first 28 days of life, and an infant death occurs from birth through the first year.

Desired System

Availability

Because there can be significant savings in terms of both financial and human resources from the delivery of effective prenatal care, the full range of services discussed in this section should be available to all women in the state.

Accessibility

Cost should not be a barrier to receiving adequate prenatal care as defined here. Since infant and fetal mortality are highest among low socio-economic women, special emphasis should be placed on making services accessible to them. Prenatal care services should be available within 30 minutes travel time for all women in the state.

Cost

Costs of prenatal care for all women must be weighed against the costs of caring for high risk infants and the costs of developmental disabilities.

Acceptability

"Prenatal care should be safe, satisfying and humane, respecting the dignity and integrity of the individual, variety in cultural forms, and the individual's right to self determination . . . Many patients desire personalized, family-centered care and some control over their pregnancy experience. Therefore, alternative methods of delivering care are needed to respond to the needs and requests of these childbearing families."³²

Quality

Early diagnosis is a key factor in improving outcome for high risk pregnancy. Therefore, an educational effort to encourage women to begin prenatal care during their first trimester of pregnancy is an important component of a desired system for prenatal care.

Prenatal care services should include:^{33, 34}

- a. The first visit, irrespective of when it occurs, should include the following components:

1. health history
 2. physical examination
 3. laboratory examinations;
- b. Subsequent visits should occur:
1. once each month, through 28th week of pregnancy
 2. once each two weeks, 28-36 weeks of pregnancy
 3. once each week after 36th week of pregnancy;
- c. Emphasis on prevention, hygienic home environment, self-care and health enhancement, including women's health counseling, promotion and maintenance of muscle tone and physical fitness, gynecologic examination, breast examination, and PAP smear;
- d. Nutritional evaluation, counseling, and supplementation;
- e. Screening and referral of women with medical, psychological, or obstetric problems or risk factors to secondary or tertiary facilities including attention to transportation and continued support and follow-up;
- f. Outreach care providing home visits during pregnancy and puerperium** for families who desire or need services; and
- g. Identification of and referral to community resources and self-help organizations.

A regionalized perinatal care system should be developed on a statewide basis, which should result in the consolidation of multiple small obstetrical units with low occupancy rates (unless such action is undesirable because of need to assure access and sensitive care). This is in keeping with the National priority for the consolidation of institutional health services as set forth in Section 1502 of the Public Health Service Act.³⁵

The desired system should consist of a regional perinatal care system of differing levels designated to handle the majority of uncomplicated pregnancies (Level I) and high risk women and neonates (Levels II and III).

This system would include the following:³⁶

**The puerperium is the period of 42 days following the birth of the fetus. During this time, the generative organs ordinarily return to normal.

1. Level I: Facilities providing risk assessment and care for low risk prenatal patients and those with minor complications. Most of this care can be provided by nurse practitioners and nurse midwives under physician supervision and should emphasize preparation for childbirth, general health maintenance, nutrition, infant feeding, and parenting skills. Consultation from Levels II and III specialty physicians should be readily available.
2. Level II: Facilities providing a full range of prenatal services for uncomplicated patients and for the majority of high risk or complicated patients. Laboratory services to readily assess fetal and maternal well-being should be available, e.g., urinary estriols, photometric analysis of amniotic fluid, lecithin and sphingomyelin ratios, as well as other diagnosis services such as x-ray and ultrasound visualization of the fetus. Patient education, as in Level I, and consultation from Level III specialists should be readily available.
3. Level III: The full range of prenatal care for normal and complicated patients should be provided as described for Level II units, as well as care for unusual or highly complicated cases. In addition, Level III should provide and maintain a highly specialized obstetric and pediatric consultation service with full laboratory facilities for the evaluation of maternal and fetal well-being for all prenatal patients within the region. These consultation services should provide information and advice to referring physicians regarding the further management of the potential or actual high-risk obstetric patient and the high-risk neonate. A Level III center should also be involved in providing continuing education, training, and evaluation for all levels of care.

To assure that women don't get lost in this system and that the quality of care is high it is important that:

1. A system of transportation from one care facility to another is developed;
2. Communications between the care centers are well established and patients and their families understand how to reach the appropriate health provider; and
3. Medical records are standardized so that they can accompany the patient to the next level of care and are usable by the physician in that center.

Poor pregnancy outcome correlates with a low nutritional level. In addition to adequate medical services, many low-income women are in need of supplemental foods to improve their health and their infants' health (before and after birth).

For the majority of women, pregnancy and delivery are uncomplicated. Consideration should be given to the most 'home-like' setting possible for delivery. Presence of important family members during labor and delivery, a non-institutional environment, and immediate contact between the mother and her newborn lessen the stress of birth. Alternative settings for delivery should be available to meet the needs of the range of women giving birth.

Continuity

In the provision of quality prenatal care services, continuity is essential. Family planning services help to assure that the infant is wanted. Adequate prenatal care (including services for high risk women) should prepare the woman for delivering in the appropriate setting. Postpartum care to assure the health of the mother and her infant should include counseling for family planning until the next planned pregnancy or if the woman desires no more children. It is important throughout this system that a high level of coordination of services exist and that the clinics or agencies be able to refer women on for another level of care when needed.

Comparative Analysis

Availability

In 1977, approximately 70 percent of women in Missouri received adequate prenatal care, defined as care begun prior to the end of the third month of pregnancy and an adequate number of visits per length of pregnancy. The Division of Health estimates that in 1978 it will be approximately 75 percent. The 25 percent receiving little or inadequate care are mostly concentrated in the Bootheel, St. Louis, and rural areas of southwest Missouri. In the Bootheel, there is a shortage of prenatal care providers. A new program begun by the Division of Health, Improved Pregnancy Outcome, is designed to increase adequate prenatal services. In the Bootheel, they have contracted with a private clinic, Southeast Missouri (SEMO), to provide care for low income women. Unfortunately, this program is funded to deliver services to approximately 75 women only.

Jackson County, which includes Kansas City, ranks relatively high (66.5 percent to 73.0 percent) in the percent of women receiving adequate prenatal care (See Appendix, Section 3.5, Maternal and Infant Health, Map 1). Although adequate prenatal care in other areas of the

state (and nationally) correlates with lowered risk, Jackson County appears to be an exception to this rule. However, the unreliability of reporting on initiation of prenatal care could account for this discrepancy. Jackson County has been designated a high Infant Mortality Area (one of nine counties so designated in Missouri) by the Department of Health, Education, and Welfare (DHEW). In comparison with the rest of the state, Division of Health data ranks Jackson County as having a higher perinatal death rate, fetal death rate, infant death rate, premature birth rate, and a higher percentage of live births to mothers under 18. (See Appendix Section 3.5, Maternal and Infant Health, Maps 2 through 6.) The Improved Pregnancy Outcome Program is working toward establishing a prenatal program in Kansas City to improve prenatal care for low income women.

The Missouri High Risk Maternal and Child Care Program under the Bureau of Prevention of Mental Retardation (Division of Health) provides funding for specialized prenatal and obstetrical care for expectant mothers with certain high risk conditions in consultation with OB/GYN physicians and pediatricians. The program also provides care for infants of women who are approved.

The medical criteria defining high risk obstetrical cases are:³⁷

1. Antepartum hemorrhage after 20 weeks gestation
2. multiple pregnancy
3. severe Diabetes Mellitus (Classes B through R only)
White's criteria
4. premature rupture of membranes diagnosed prior to the onset of labor (American College of Obstetrics/Gynecology definition). This must be diagnosed prior to the 37th week of gestation.
5. Rh sensitized and other isoimmunized conditions, and
6. severe hypertensive disease of pregnancy diagnosed prior to the onset of labor (American College of Obstetrics/Gynecology definition).

The Missouri High Risk Maternal and Child Care Program also has a pediatric section that covers all infants weighing between 800 and 2,000 grams diagnosed with severe respiratory distress syndrome and treated in a neonatal intensive care unit which is contracted with the Division of Health. The program also provides funds for the transportation of obstetrical patients with any high risk from hospital to hospital and for the transportation of infants with any high risk condition from one level of care to another. This includes transportation from a tertiary center back to a lower level center.

In addition, the High Risk Program provides funds for grants for continuing education of all health care deliverers emphasizing identification and referral of the high risk pregnancy and assure skilled medical care for the newborn at risk.

In 1978, 464 mothers and their offspring were approved for care out of 631 applications to the obstetrical side of the High Risk Maternity and Child Care Program. An estimated 2,000 women each year fit the criteria for services. During the same period the pediatric side helped 88 neonates.

Accessibility

Medicaid does not reimburse for the full cost of prenatal care. Physicians, especially in areas where a shortage exists, do not always accept Medicaid patients. In the absence of public clinics, these women are without services.

In other areas of the state, services exist and are accessible to low income women but the services aren't fully utilized. In St. Louis, the Improved Pregnancy Outcome program has identified two problems:

1. women aren't aware of the services which are available to them; and
2. women often aren't treated with respect when they do seek services.

The program has, therefore, directed its efforts in St. Louis toward accessing rather than increasing prenatal care services through an educational program for women and for the providers of care. As with the SEMO program, the Improved Pregnancy Outcome program has contracted with an existing agency in St. Louis.

Throughout the state (but especially in rural areas), physicians need to be educated to the benefits of referring high risk women to medical centers where the medical technology and auxillary personnel exist to handle complications.

Cost*

Acceptability

See Accessibility.

Quality

No data exists as to the quality of care received by women in private physicians offices.

Currently, thirty-six hospitals in the state have contracts with the High Risk Maternity and Child Care Program (although the three levels of care under Desired System are not used in Missouri) to provide care for high risk obstetrical patients.

The criteria set by the Division of Health includes:

1. Over 400 deliveries per year; and
2. a board certified or eligible obstetrician and pediatrician on staff.

There are currently two areas of the state which are not covered by hospitals which meet the above criteria for handling high risk women: the West Plains area (Southcentral Missouri) and North Central Missouri.

The Division of Health has instituted a program of providing supplemental foods for women, infants, and children (WIC) such as cheese, milk, formula, high iron cereals, and Vitamin C fruit juices. The WIC program is not totally acceptable in that it defines 'nutritionally at risk' as those already ill. Women or children who are already anemic can receive supplemental foods, but once the hemoglobin rises to an acceptable level, the supplemental foods are subject to termination. The program lacks preventive aspects.³⁸

Continuity

There is little information about the continuity of services for women in Missouri.

Problem Description

1. Since infant and fetal mortality are highest among low socio-economic women, special emphasis should be placed on making services available and accessible to them.
2. Financial reimbursement and public education are two areas where intervention could bring about a better system of maternal and child health. The lack of insurance coverage for a full range of perinatal services and exclusions from insurance benefits based upon the patient's age and/or marital status result in hazardous and unreasonable financial barriers to care. Historically, the rates of fetal and neonatal mortality are

highest among those experiencing these barriers; i.e., the low income, unwed, and teenage mothers.³⁹ Low reimbursement levels within the Missouri Medicaid Program have acted as disincentives for private obstetricians who might otherwise increase their case-loads of low income patients.⁴⁰

3. More funding should be made available for the High Risk Maternal and Child Care Program, the Improved Pregnancy Outcome Program, and the WIC Program so that good prenatal care can be available to all low-income women in Missouri.
4. Improvements should be made in the regionalized perinatal system:
 - a. Currently Missouri has a two-level rather than three-level system. An analysis needs to be done as to whether this is an adequate system.
 - b. Referral procedures, including standardization of patients records, should be established among the levels of care.
5. The quality of prenatal care received by women should be determined.
6. The feasibility of establishing alternative delivery settings should be explored.

Goals, Objectives, and Actions

GOAL: TO ENSURE THAT QUALITY PRENATAL CARE SERVICES ARE AVAILABLE AND ACCESSIBLE TO ALL WOMEN IN MISSOURI.

OBJECTIVE 1: To reduce infant mortality to 12.0 deaths per 1,000 live births (see Health Status, Section 3.2), the following actions should be implemented.

Recommended Action 1: The actuarial possibilities of extending insurance coverage to cover prenatal services and to provide benefits for unwed and teenage mothers should be explored. This coverage should include normal prenatal care in addition to coverage for the diagnosis and treatment of prenatal complications.⁴¹

Recommended Action 2: The Improved Pregnancy Outcome Program should be expanded to cover the prenatal care of all low-income women in high risk areas of the state.

Recommended Action 3: The Missouri High Risk Maternal and Child Care Program should be expanded to provide funding for services for all women who meet the criteria of being at risk as defined by the program. This would include the current program definition of financial risk.

Recommended Action 4: A WIC Program should be available in every county which has a local public health unit and the scope of the preventive aspects of the program should be expanded.

Recommended Action 5: HSAs should be urged to study the feasibility of implementing a three-tiered system of perinatal care.

Recommended Action 6: There should be formal coordination between the Division of Health's Child Health Conferences, Crippled Children's Service, High Risk Child Clinics, Maternal and Infant Care Projects, Missouri High Risk Maternal and Infant Care Program, Medicaid's Early Periodic Screening and Detection Program, Department of Mental Health Infant Stimulation Programs, and Voluntary agencies to avoid overlap, to establish referral patterns, and to meet existing needs.

C. National Health Planning Guidelines

1. Neonatal Intensive Care

"A Neonatal Intensive Care Unit (NICU) is a special unit staffed and equipped solely for the intensive care of newborns who are less than 28 days old. The term 'bed' is used in a generic sense and includes isolettes or bassinets. Neonatal intensive care is a highly specialized service required by only a very small percentage of infants. It has been estimated that four neonatal intensive care beds per 1,000 live births are adequate to meet this need, taking into account the incidence of high-risk pregnancies, the percentage of live births requiring intensive care and the average length of stay in neonatal intensive care units.

Since the minimum number of isolettes will serve the patient load resulting from a representative population cohort for approximately one million, perinatal centers will often be a resource of two or more health service areas.

The American Academy of Pediatrics has noted that 'the best care will be given to high-risk and seriously ill neonates if intensive care units are developed in a few adequately qualified institutions within a community rather than many hospitals. Properly conducted, early transfer of these infants to a qualified unit provides better care than to attempt to maintain them in inadequate units.' This regionalized approach is reflected in the minimum size standard which is designed to foster the location of neonatal intensive care units in medical centers which have available special consultative services, staff, equipment, and facilities, and enhance the quality of care. The standard is also designed to promote efficiency of operation, which has been found to require neonatal intensive care units containing 20 or more beds."⁴²

National Standards

- a. Neonatal services should be planned on a regional basis with linkages with obstetrical services;
- b. The total number of neonatal intensive and intermediate care beds should not exceed 4 per 1,000 live births per year in a defined neonatal service area. An adjustment upward may be justified when the rate of high-risk pregnancies is unusually high, based on analyses by the HSA; and
- c. A single neonatal special care unit (Level II or III) should contain a minimum of 15 beds. An adjustment downward may be justified for a Level III unit when travel to an alternate unit is a serious hardship due to geographic remoteness, based on analyses by the HSA.

Discussion

"For this standard, the concept that has been adopted is the widely endorsed one of regionalization, involving various levels of care. Under this concept, Level III units are staffed and equipped for the intensive care of new-borns as well as intermediate and recovery care. Level II units provide intermediate and recovery care as well as some specialized services. Level I units provide recovery care."⁴³

The concept provides for regionalization with formal communication established between centers and hospitals (as necessary). This approach should reduce mortality rates and "improve the development of scarce health resources."⁴⁴

Adjustments to these standards can be developed where areas with unusually high rates of high-risk pregnancy can be identified and where travel time to a Level II facility due to geographic remoteness is excessive (as established by the Health Systems Agency).

Current System

There are presently seven hospitals aided by the Missouri High Risk and Maternity Care Program (1686 Program) offering neonatal intensive care services in Missouri.⁴⁵ (See appendix under Section 3.5, Maternal and Infant Health Services.) Of these seven facilities, two are located in St. Louis, two in Kansas City, and three in outstate Missouri. The beds in these facilities are listed as intensive care beds with no particular level of care defined. At the present time, information on the existence of a formal referral system and/or any attempts to regionalize neonatal care services is not available.

Conclusion

The Maternal and Infant Health component has attempted to address a variety of health services and problems of mothers and infants. At this time, it is not possible to draw any substantive conclusions regarding the delivery of neonatal intensive care services due to complex and diverse issues involved and due to the lack of quantitative information relative to service usage and numbers of neonatal intensive care units.

Goals, Objectives, and Actions

The indicator levels as established in the National Guidelines for Health Planning should provide sufficient flexibility to ensure that specially staffed and equipped special care units will have a sufficiently large population in order to maintain quality and justify its costs.

GOAL: BY 1983, MISSOURI HSA'S SHOULD ADDRESS THE REGIONALIZATION OF NEONATAL SERVICES LINKED WITH OBSTETRICAL SERVICES.

GOAL: BY 1983, THE TOTAL NUMBER OF NEONATAL INTENSIVE AND INTERMEDIATE CARE BEDS SHOULD NOT EXCEED 4 PER 1,000 LIVE BIRTHS IN A DEFINED NEONATAL SERVICE AREA.

GOAL: BY 1983, ALL LEVEL II AND LEVEL III NEONATAL SPECIAL CARE UNITS SHOULD OBTAIN A DESIRED MINIMUM OF 15 BEDS.

For the present edition of the Missouri State Health Plan, adoption of the National Guidelines Standards for Neonatal Intensive Care Services is recommended.

Health Systems Agencies desiring to justify an exception or make an adjustment to the standards for their health service area must document such exceptions and/or adjustments. This analysis must be quantitative and consistent with the agreed upon approach (see Guidance Document for Development of Health Systems Plans, Revised). Development of a data base relative to Neonatal Intensive Care Units will be forthcoming in future editions of the Missouri State Health Plan.

2. Obstetrical Services

Declining birth rates and underutilization of obstetrical beds have encouraged the development of obstetrical standards for the minimum number of deliveries and occupancy rates in facilities providing obstetrical services. These standards have been designed to both discourage proliferation of underutilized services and to eliminate unnecessary duplication. Quality of care also hinges on the appropriate establishment of these services.

The approach supported by the Missouri State Health Plan "emphasizes the importance of planning comprehensively for pregnant women and for mothers and their infants, for establishing effective linkages among various levels of care, and for providing the level of care most appropriate to differing conditions and risks."⁴⁶ In response to the need for regionalization of obstetrical care, the national guidelines emphasize a tri-level approach: Level I for uncomplicated cases, Level II for services of uncomplicated problems, and Level III for all serious types of illnesses and abnormalities. (For a detailed discussion of the three tiered system see page 289.)

National Standards

- a. Obstetrical services should be planned on a regional basis with linkages among all obstetrical services and with neonatal services.
- b. Hospitals providing care for complicated obstetrical problems (Level II and III) should have at least 1,500 births annually.
- c. There should be an average annual occupancy rate of at least 75 percent in each unit with more than 1,500 births per year.

Discussion

The concept being proposed in these Guidelines is that "a systematized cohesive regional network (of obstetrical services) including a number of differentiated resources is the approach most likely to achieve the objective of . . . providing the highest quality care while reducing rates of maternal, fetal, and infant mortality as well as to improve deployment of scarce resources . . ."⁴⁷ These concepts have been broadly recognized by the American College of Obstetricians and Gynecologists in the document "Toward Improving the Outcome of Pregnancy."⁴⁸

The guidelines are applicable only to Level II and Level III services. They do not address either urban or rural based Level I services. The only provision placed on Level I services is that small obstetrical units with low occupancy should undertake consolidation and coordination of

services unless it is undesirable to do so based on the need to assure ready access to services. Thus, the overall thrust of the obstetrical standards is to delineate the degree of complexity of patient needs and to determine where, and by whom care should be provided with emphasis on providing early access to the health care system for high risk cases and prompt referral among the differing levels of care.

Current System

The present obstetrical services system in Missouri is established along differing lines than the three tiered system described above. This incompatibility of systems and data makes a comparison between the obstetrical guidelines and the current system in Missouri nearly impossible. In the appendix under the Maternal and Infant Health Services subsection, there is a listing, by health service area, of births in those hospitals under contract with the Missouri High Risk Maternity and Child Care Program which provide obstetrical services based on the two major criteria previously established by the Missouri Division of Health. These hospitals must exceed 400 deliveries per year and have a board certified or eligible obstetrician and pediatrician on staff.

Conclusion

It is not possible at this time to develop any substantive conclusions about how well obstetrical services as delivered in Missouri meet the National Health Planning Guidelines. The complex and highly political issue of designation of formal "level of service" (I, II, or III) hinges on future data gathering and analysis. As long as the systems are incompatible and there is no attempt to ensure quality delivery of care in all Missouri obstetrical facilities, then the situation will not improve.

Goals, Objectives, and Actions

The indicator levels as established in the National Health Planning Guidelines should provide sufficient flexibility to ensure that specially staffed and equipped special care units will have a sufficiently large population in order to maintain quality and justify its costs.

GOAL: BY 1981, THE HEALTH SYSTEMS AGENCIES IN MISSOURI SHOULD ADDRESS IN THEIR HEALTH SYSTEMS PLANS THE REGIONALIZATION OF OBSTETRICAL SERVICES.

OBJECTIVE 1: By 1980, the health systems agencies should identify all Level I, Level II, and Level III obstetrical facilities in their health service area.

GOAL: BY 1983, ALL LEVEL II AND LEVEL III OBSTETRICAL FACILITIES SHOULD ENSURE THAT THEY ARE OPERATING AT A 75 PERCENT AVERAGE ANNUAL OCCUPANCY RATE.

GOAL: BY 1983, ALL LEVEL II AND LEVEL III OBSTETRICAL FACILITIES SHOULD ENSURE THAT THEY ARE OPERATING AT A DESIRED MINIMUM OF 1,500 BIRTHS ANNUALLY.

For the present edition of the Missouri State Health Plan, the adoption of the National Guidelines standards for Obstetrical Services is recommended.

Health Systems Agencies desiring to justify an exception or make an adjustment to these standards for their health service area must document such exceptions and/or adjustments. This analysis must be quantitative and consistent with the agreed upon approach. (See Guidance Document for Development of Health Systems Plans, Revised.) Development of a data base for identification of service levels and utilization relative to the National Guidelines will be forthcoming in future editions of the Missouri State Health Plan.

ENDNOTES

¹"Family Planning Services: Focus for State Initiative - Missouri" (The Alan Guttmacher Institute, 1975) p. ii.

²Unpublished data from the Missouri State Center for Health Statistics (MSCHS).

³U.S. Department of Health, Education, and Welfare, Approaches to Adolescent Health Care in the 1970s, DHEW Publication No. (HSA) 76-5014 (1975) p. 17.

⁴MSCHS, op.cit.

⁵For further discussion of this see the following: Approaches to Adolescent Health Care, op.cit., and Planned Parenthood Federation of America, Inc., 11 Million Teenagers: What Can Be Done About the Epidemic of Adolescent Pregnancies in the United States (New York, 1976) pp. 9-16.

⁶"Family Planning Services: Focus for State Initiative - Missouri" op.cit., p. ii.

⁷Ibid., p. iv.

⁸Ibid.

⁹DHEW Program Guidelines for Family Planning Services.

¹⁰"Family Planning Services - What We Mean" (U.S. Department of Health, Education, and Welfare, October 20, 1971), p. 3.

¹¹Draft Criteria and Standards developed by the Greater St. Louis Health Systems Agency (January 20, 1978), p. 4.

¹²"Family Planning Services: Focus for State Initiative - Missouri," op.cit., p. iii.

¹³Family Planning Services Under Title XX for Fiscal Year 1977-78, Missouri Division of Health, p. 14.

¹⁴"Family Planning Services: Focus for State Initiative - Missouri," op.cit., p. iii.

¹⁵Ibid.

¹⁶Planned Parenthood Federation of America, Inc., Family Planning Services: Focus for State Initiative - Missouri (New York, 1975), p. 10.

- ¹⁷DHEW Program Guidelines for Family Planning Services.
- ¹⁸Planned Parenthood Federation of America, Inc., op.cit., p. iii.
- ¹⁹Missouri Division of Health, "Guide for Establishment of Family Planning Clinic Services," (Revised 12/1/77).
- ²⁰"Family Planning Services - What We Mean," op.cit., p. 3.
- ²¹Family Planning Services: Focus for State Initiative - Missouri, op.cit., pp. 5-7.
- ²²11 Million Teenagers, op.cit.
- ²³Missouri Department of Elementary and Secondary Education, A Guide for Developing a Comprehensive K-12 Health Instruction Program (Jefferson City, 1975).
- ²⁴Family Planning Services: Focus on State Initiatives - Missouri, op.cit., p. 10.
- ²⁵Department of Health, Education, and Welfare, November, 1978.
- ²⁶Jeff Harris and Emmett Reeler, "Infant Mortality: An Algorithm for Health Planners," January, 1977.
- ²⁷Ibid.
- ²⁸Robert Wood Johnson Foundation, "Special Report," Number Two, 1978, p. 4.
- ²⁹Mid-America Health Systems Agency, "Health Systems Plan, 1978-1983," (Kansas City, 1978), p. 5-23.
- ³⁰Robert Wood Johnson Foundation, op.cit., p. 4.
- ³¹Missouri Area V Health Systems Agency, "Missouri Area V Health Systems Plan, 1978."
- ³²Florence E. F. Barnes (Editor), Ambulatory Maternal Health Care and Family Planning Services, (APHA, 1978), p. 4.
- ³³Doctors and Dollars are Not Enough, Childrens Defense Fund, 1976.
- ³⁴International Childbirth Education Association, Inc., "Position Paper on Planning Comprehensive Maternal and Newborn Services for the Childbearing Year," December, 1978.
- ³⁵Southwest Missouri Health Systems Agency, "Health Systems Plan, 1978-1983," (Springfield, 1978), p. 5-113.2.
- ³⁶Florence E. F. Barnes (Editor), op.cit., p. 10.

³⁷Missouri Division of Health.

³⁸Greater St. Louis Health Systems Agency, "Health Systems Plan, 1978-1983," (St. Louis, 1978), p. V-MC-17.

³⁹Mid-America, op.cit., p. 5-46.

⁴⁰Ibid., p. 5-34.

⁴¹Ibid., p. 6-14.

⁴²National Guidelines for Health Planning.

⁴³Ibid.

⁴⁴Ibid.

⁴⁵Unpublished data, Missouri High Risk and Maternity Care Program.

⁴⁶National Guidelines, op.cit.

⁴⁷National Guidelines, op.cit.

⁴⁸National Guidelines, op.cit.

II. SURGICAL SERVICES

A. Overview and Analysis

Surgical services are defined as those services which diagnose and treat physical disease and conditions or their symptoms by means of operative techniques normally in conjunction with the administration of anesthesia. Surgical services include cardiovascular surgery, general surgery, neurological surgery, open heart surgery, organ transplant, orthopedic surgery, plastic surgery, thoracic surgery, podiatric surgery, etc.

System Considerations

Surgical services should be available and accessible to all residents of the state. Services should be utilized appropriately and adequate safeguards should be established to protect against unnecessary surgery. Emphasis should be placed on the most medically effective and cost effective method for surgery.

Ambulatory surgery has been seen to be a logical, viable alternative to inpatient care in the case of minor operations that may unnecessarily utilize hospital services. Ambulatory surgical programs are usually developed within the context of four settings: 1) hospital surgical suites; 2) specialized units within a hospital; 3) freestanding hospital owned units as satellites; and 4) freestanding facilities that operate independently of other facilities and hospitals.

It has been estimated that between 20 - 40 percent of all surgery and 50 percent of pediatric surgery could be performed on an ambulatory basis.¹ However, these estimates are based on the supposition that this surgical mode will be well accepted by both physicians and patients.

Ambulatory surgery charges are reported to be 25 - 50 percent less than the inpatient charges for comparable procedures. However, as identified in the Mid-America Health Systems Agency's Health Systems Plan:

"The transfer of medically appropriate services from an inpatient to an outpatient basis can serve to reduce community costs only if accompanied by commensurate adjustments in the existing capital structure and operating behavior of facilities. It must be recognized that inappropriate utilization of the existing facilities, any resulting idle capacity, or unnecessary facility additions can nullify some or all of the cost savings potentially achieved through the increased use of ambulatory surgery."²

The availability and accessibility of adequate and appropriate surgical facilities and qualified personnel is particularly important to the health problems identified in Missouri. Accidents, cancer, and heart disease, three of the top five causes of death in Missouri, are often treated through the use of surgery. In addition, surgery is the treatment of choice for a large number of medical diagnoses.

Table 3.5-3 indicates the number of surgical operations (inpatient and outpatient) by health service area. These data indicate that surgical facilities appear to be available in most areas. The total number of inpatient and outpatient surgical operations increased in all health service areas during the noted time period.

In summary, support for surgery performed on an outpatient basis should be promoted and encouraged. Evaluation of both statewide need and cost for differing forms of surgery and their relationship to the outpatient mode will be forthcoming in future editions of the Missouri State Health Plan.

TABLE 3.5-3
FACILITIES PERFORMING SURGERY
1977

AREA	NUMBER OF FACILITIES	INPATIENT	PERCENT OF TOTAL	OUTPATIENT	PERCENT OF TOTAL	TOTAL
HSA I	25	92902	86.5	14491	13.5	107393
HSA II	56	71079	71.9	27746	28.1	98825
HSA III	35	172964	87.4	24999	12.6	197963
HSA IV	23	45235	92.6	3637	7.4	48872
HSA V	<u>26</u>	<u>32300</u>	<u>94.1</u>	<u>2018</u>	<u>5.9</u>	<u>34318</u>
STATE	165	414480	85.0	72891	15.0	487371

B. National Health Planning Guidelines

1. Open Heart Surgery

Open heart surgery involves surgery performed on the heart when the chest cavity has been opened and which utilizes a heart-lung by-pass machine to perform the functions of blood circulation during the surgery. Only a small portion of patients with heart disease require open heart surgery, although the total number of patients requiring this surgical procedure is increasing.

Open heart surgery should be utilized only when necessary, with safeguards built into the system to protect against "unnecessary surgery." However, despite information from population based analysis and mortality rates, it is still not possible to accurately estimate the number of people potentially needing open heart surgery. To prevent duplication of costly resources which are not fully utilized, the opening of new open heart surgery units should be contingent upon full utilization of existing units and the placement of data and quality assessment control within the total program.

National Standards

- a. There should be a minimum of 200 open heart procedures performed annually, within three years after initiation, in any institution in which open heart surgery is performed for adults.
- b. There should be a minimum of 100 pediatric open heart operations annually, within three years after initiation, in any institution in which pediatric open heart surgery is performed, of which at least 75 should be open heart surgery.
- c. There should be no additional open heart units initiated unless each existing unit in the health service area(s) is operating and is expected to continue to operate at a minimum of 350 open heart surgery cases per year in adult services or 130 pediatric open heart cases in pediatric services.

Discussion

Open heart procedures require very costly, highly specialized manpower and facilities. Every effort should be made to limit duplication while maintaining high quality care. The application of minimum case loads are essential to maintain and strengthen team skills and to promote cost effectiveness.

The standards, as delineated in the National Health Planning Guidelines are based on recommendations of the Inter-Society Commission on Heart Disease Resources.

Current System

Open heart surgery services are presently available in 12 Missouri institutions which are primarily located in the metropolitan areas of St. Louis and Kansas City (see Table 3.5-4). Open heart surgery services appear to be available and accessible to all Missourians.

TABLE 3.5-4
FACILITIES PERFORMING OPEN HEART SURGERY

AREA	NUMBER OF FACILITIES	NUMBER OF PROCEDURES PERFORMED IN 1977
HSA I	6	1,506
HSA II	1	88
HSA III	4	1,396
HSA IV	1	319
HSA V	<u>0</u>	<u>0</u>
STATE	12	3,309

Source: Missouri Center for Health Statistics
(Extracted from Missouri Hospital Profiles for 1977: Bureau of Health Facilities Planning and Construction).

Conclusion

Accurate information on utilization of surgical services especially in regard to pediatric open heart surgery must be developed. It is not possible at this time to draw any substantive conclusions regarding the relationship of the current system to that of the National Health Planning Guidelines.

Goals, Objectives, and Actions

The indicator levels as established in the National Health Planning Guidelines should provide sufficient guidance and flexibility to allow for additional facilities as needed, while containing costs and maintaining a high level of care.

GOAL: BY 1983, THERE SHOULD BE A DESIRED MINIMUM OF 200 OPEN-HEART PROCEDURES PERFORMED ANNUALLY WITHIN ANY INSTITUTION PERFORMING OPEN-HEART SURGERY.

GOAL: BY 1983, THERE SHOULD BE A DESIRED MINIMUM OF 100 PEDIATRIC HEART PROCEDURES ANNUALLY WITHIN ANY INSTITUTION IN WHICH PEDIATRIC OPEN-HEART SURGERY IS PERFORMED.

GOAL: BY 1983, ADDITIONAL OPEN-HEART UNITS SHOULD NOT BE ESTABLISHED UNLESS EACH EXISTING UNIT IS OPERATING AT 350 ADULT OPEN-HEART CASES OR 130 PEDIATRIC OPEN-HEART CASES PER YEAR.

For the present edition of the Missouri State Health Plan, the adoption of the National Guideline standards for Open Heart Surgery is recommended.

Health Systems Agencies desiring to justify an exception or make an adjustment to these standards, for their health service area, must document such exceptions and/or adjustments. This analysis must be quantitative and consistent with the agreed upon approach. (See Guidance Document for Development of Health Systems Plans, Revised.)

2. Cardiac Catheterization

"Cardiac catheterization is an accepted diagnostic procedure, used effectively in the diagnosis of approximately 30 different heart and circulatory conditions. The procedure involves inserting a catheter (a long, fine, flexible tube) into a vein or artery in the patient's arm or leg, and then carefully manipulating the free end of the catheter through the blood vessels and into the chambers of the heart. With the catheter in place, the physician is able to perform various blood flow studies, withdraw blood for laboratory analysis, and record blood pressures for various cardiac locations.

Some of the most common studies are:

Angiocardiography - In this procedure radio-opaque fluid is injected through the catheter into the chambers of the heart and with the use of x-ray equipment (fluoroscopy) the flow of blood through the chambers of the heart can be seen instantly on an x-ray screen and/or can be recorded on film for later viewing. These film records can give the cardiologist a clear picture of the exact locations of interest in the patient's heart.

Coronary Arteriography - This procedure is similar to angiocardiography but is used to examine the blood flow conditions of those arteries supplying the heart. The catheter is positioned in the arteries supplying the heart and the radio-opaque fluid injected. This procedure is particularly useful in studying heart attack victims, because the procedure allows precise areas of interest to be identified, and the existing problems to be clearly defined.

Pulmonary Arteriography - This procedure involves the study of blood flow from the heart chambers to the lungs. Pulmonary arteriography is used to diagnose problematic flow patterns.

Intra-Cardiac Electrocardiography - In this procedure the tip of the catheter is used to perform an electrocardiogram (ECG) to assist the diagnosis of heart problems which result from malfunctions of the cardiac electrical activity."³

Many facilities offering open heart surgery have also installed cardiac catheterization facilities. Federal Guidelines specifically state that new cardiac catheterization units should be installed only in those facilities already performing open heart surgery. The linkage between open heart surgery and cardiac catheterization has been aptly described in the Greater St. Louis Health Systems Plan:

"Since catheterization labs are used to determine cardiac problems, a significant number of persons being tested in the labs will undergo open heart surgery. It is estimated that one-sixth to one-third of the persons tested will require surgery.

However, the primary reason given for implementing this standard (for cardiac catheterization) is to ensure the safety of the patient. With a procedure as sensitive as cardiac catheterization, some patients will experience serious difficulties which may require emergency surgery. While the overall frequency of these complications may not be great, the risks are real. One study found that the average mortality rate for cardiac catheterization was 0.45 percent, approximately 1 patient died for every 220 procedures performed. It is urged by some that the presence of a cardiac surgery team within a hospital providing cardiac catheterization services is imperative in these emergency situations. Other physicians believe that the transportation system in urban areas can adequately handle emergencies within time constraints, thus justifying cardiac catheterization labs where open heart surgery is not performed.

Another reason given for the linkage of the two services is "the need for close interaction among the disciplines . . . cardiology, cardiovascular radiology, and cardiovascular surgery : . ." (Inter-Society Commission) which can best be achieved by offering both services in the same institution.

This argument is also not universally accepted. Some suggest that this proposed linkage could generate potential for self-referrals and a possible lack of objectivity in evaluating results, if an institution is committed to maintaining both of the services, lab and surgery, at high levels of utilization."⁴

National Standards

- a. There should be a minimum of 300 cardiac catheterizations, of which at least 200 should be intracardiac or coronary artery catheterizations, performed annually in any adult cardiac catheterization unit within three years after initiation.
- b. There should be a minimum of 150 pediatric cardiac catheterizations performed annually in any unit performing pediatric cardiac catheterizations within three years after initiation.
- c. There should be no new cardiac catheterization unit opened in any facility not performing open heart surgery.
- d. There should be no additional adult cardiac catheterization unit opened unless the number of studies per year in each existing unit in the health service area(s) is greater than 500 and no additional pediatric unit opened unless the number of studies per year in each existing unit is greater than 250.

Discussion

"The modern cardiac catheterization unit requires a highly skilled staff and expensive equipment. Safety and efficacy of laboratory performance requires a case load of adequate size to maintain the skill and efficiency of the staff. In addition, the underutilized unit represents a less efficient use of an expensive resource and frequently reflects unnecessary duplication."⁵

Pediatric cardiac catheterization requires special facilities which are reflected in the lower target numbers as recommended by the Section on Cardiology of the American Academy of Pediatrics.

The overall standards as delineated in the National Health Planning Guidelines are based on recommendations from the Inter-Society Commission on Heart Disease Resources.

Current System

Complete information is not available on a statewide basis to assess the number of cardiac catheterization procedures or where facilities are located. When this information becomes available on a statewide basis, the State Health Plan will address the efficacy and relationship of present utilization to that of the National Guidelines in order to determine future policy.

Goals, Objectives, and Actions

The indicator levels as established in the National Health Planning Guidelines should provide sufficient guidance and flexibility to allow for additional facilities as needed while containing costs and maintaining a high level of care.

GOAL: BY 1983, THERE SHOULD BE A DESIRED MINIMUM OF 300 CARDIAC CATHETERIZATIONS PERFORMED ANNUALLY IN ANY ADULT CATHETERIZATION UNIT.

GOAL: BY 1983, THERE SHOULD BE A DESIRED MINIMUM OF 150 PEDIATRIC CARDIAC CATHETERIZATIONS PERFORMED ANNUALLY IN ANY PEDIATRIC CATHETERIZATION UNIT.

GOAL: BY 1983, ADDITIONAL ADULT CATHETERIZATION UNITS SHOULD NOT BE OPENED UNLESS THE NUMBER OF STUDIES PER YEAR EXCEEDS 500 IN A HEALTH SERVICE AREA. ANY PROPOSED FACILITY MEETING THIS REQUIREMENT MUST ALSO PERFORM OPEN-HEART SURGERY MEETING THE OPEN-HEART SURGERY GOALS.

For the present edition of the Missouri State Health Plan, the adoption of the National Guideline standards for Cardiac Catheterization is recommended.

Health Systems Agencies desiring to justify an exception or make an adjustment to these standards, for their health service area, must document such exceptions and/or adjustments. This analysis must be quantitative and consistent with the agreed upon approach. (See Guidance Document for Development of Health Systems Plans, Revised.)

ENDNOTES

¹Thomas R. O'Donovan, Ambulatory Surgical Centers: Development and Management, (Aspen Systems Corp.).

²Mid-America Health Systems Agency, Health Systems Plan.

³Greater St. Louis Health Systems Agency, Health Systems Plan.

⁴Greater St. Louis Health Systems Agency, Health Systems Plan.

⁵National Health Planning Guidelines.

OVERVIEW OF RADIOLOGIC TECHNOLOGY

The field of radiologic technology involves the utilization of radiant energy in the field of medicine to assist the physician in the diagnosis and treatment of certain types of diseases. There are basically four diagnostic and therapeutic techniques in radiological services:

1. X-ray technology;
2. Nuclear Medicine technology;
3. Radiation therapy; and
4. Computerized Tomographical Scanning.

Radiologic technology is utilized in hospitals, independent laboratories, physicians offices, health departments, clinics, and other specialty operations (e.g., mobile screening).

Radiological services are a source of very high costs to hospitals and physicians due to the large investment and operating costs. There has been an increase in the number and utilization of radiological equipment and manpower in the last 10 years in the United States with little improvement in the availability and accessibility of quality equipment and manpower. The widespread increase in the use of this equipment is attributed to a number of factors. The most outstanding of these is the technological backgrounds of recent medical graduates, fear of malpractice, and the sometimes encouraging results certain techniques have demonstrated for diagnosis and treatment.

Although utilization rates of sophisticated radiation devices for diagnosis and treatment purposes are being reported by some facilities and operators, the available data cannot be analyzed on a specific population basis. In addition, there is a lack of comprehensive and reliable data on the number and location of radiological equipment. The State of Missouri, through the Division of Health is required to inspect all x-ray emitting equipment in the state every two years. However, as of this writing, there is no exact count of the number and location of this equipment much less continued and regular inspection. Despite these inherent limitations, this edition of the Missouri State Health Plan will begin to address both diagnostic and therapeutic radiology equipment and services.

III. DIAGNOSTIC RADIOLOGY

A. Overview and Analysis

Diagnostic radiology services are those services which detect the presence of physical disease and other potential negative health conditions through the use of radiant energy. In this process, organs and structures of varying density in the patient's body are penetrated by radiation producing images on radiographic film. Blood vessels and lymphatics can also be recorded through the injection of radio opaque materials. In addition, organ motion can be developed by recording multiple images on the film. These techniques are utilized clinically by physicians, dentists, podiatrists, and chiropractors.

System Considerations

Diagnostic radiology services should be made available and accessible to the population in a manner that permits the effective utilization of equipment and procedures. These equipment and procedures should be developed on a basis consistent with accepted medical practices. Proliferation of costly equipment and overutilization of services should be avoided. This means that highly expensive equipment, such as CT Scanners, should be placed only in those locations or settings where individuals will derive clear diagnostic benefits from their application. Less costly equipment also should be utilized in appropriate numbers and locations to provide a clear diagnostic benefit to patients and an alternate service where more costly and sophisticated equipment is unneeded.

B. National Health Planning Guidelines

1. Computed Tomographic Scanning

Computed tomographic (CT) scanning is a recently developed technique which combines radiographic and computer techniques to produce cross-sectional images of the head and body. Conventional x-ray films show internal structures superimposed upon each other and, therefore, are best suited to high contrast structures such as bone. In contrast, the CT scanner is capable of producing high quality images of soft-tissue structures.

CT scanning technology was developed for clinical use in England in the late 1960's. By 1974, scanners were available for producing sectional images anywhere in the body. The first 2 CT scanning units in the United States were installed in mid-1973. Less than 4 years after its introduction, nearly 800 CT scanners were in operation.

Such widespread development of this new medical technology has attracted the attention of health service planners, providers, and research workers to the problems of medical efficacy and expense. Although the long-term effects of CT scanning on medical care and its costs are not clear, there is very little doubt that the technique represents a major improvement in diagnostic procedures.

In terms of medical care expenditures, in 1976, scanners ranged in price from \$300,000 to \$700,000 with an average head scanner costing \$387,000.¹ This figure has been reduced in the past two years, with some manufacturers producing head scanning units for approximately \$100,000. Operating costs for head scanning CT units average approximately \$187,000 per year.² Purchase cost of a total body scanning unit in 1978 ranged from \$430,000 to \$700,000 with an average cost of approximately \$526,000.³ Operating costs ranged from \$250,000 to \$475,000. However, in terms of cost to the total health care system, the real cost of CT scanning depends not only on the number of units, their purchase price, and the number of scans performed, but also on the extent to which CT scanning replaces other diagnostic procedures and reduces hospital and medical services utilization. At present, there is insufficient data to measure this cost.

National Standards

- a. A Computed Tomographic Scanner (head and body) should operate at a minimum of 2,500 medically necessary patient procedures per year, for the second year of its operation and thereafter.

- b. There should be no additional scanners approved unless each existing scanner in the health service area is performing at a rate greater than 2,500 medically necessary procedures per year.
- c. There should be no additional scanners approved unless the operators of the proposed equipment will set in place data collection and utilization review systems.

Discussion

"Because CT scanners are expensive to purchase, maintain, and staff, every effort must be made to contain costs while providing an acceptable level of service. Full and appropriate utilization of all existing units, regardless of location, will prevent duplication and limit increases in health care costs."⁴ This statement succinctly defines the national and state thrust in regards to high cost technology such as CT scanners. The minimum levels of utilization as outlined in the "National Health Planning Guidelines" dictate that a computed tomographic scanner (head and body) should operate at a desired minimum of 2,500 patient procedures per year. Additional CT scanners should not be approved unless every scanner in a health service area is operating at a rate greater than 2,500 patient procedures per year and the operators of the proposed equipment will establish data collection and utilization review systems.

The Missouri State Health Planning and Development Agency (SHPDA) approach is that a number of factors must be taken into account in planning for appropriate utilization of CT scanners in Missouri, most important being the actual operating experience (scan time and the ratio of body to head scans) of hospitals and institutions as demonstrated in a recent study on CT scanning performed by the Health Care Technology Center at the University of Missouri. The economics of these machines have also been considered in light of declining initial cost. For the quick scanning CT scanners that do predominantly head scans, the utilization level in the national guidelines can be considered as extreme minimums. Furthermore, for both types of equipment (head and body) the need to spread the high initial cost over as much operating time as possible makes it imperative that these machines operate at as high a volume as the equipment allows without jeopardizing the quality of care.

A summary of current utilization data and information on service programs in operation or proposed services in a health service area should be collected by individual HSAs to enable them to plan for the adequate distribution of CT scanning services in their areas. Moreover, the HSAs should specifically encourage sharing arrangements between operators until the existing capacity is well utilized.

Current System

CT Scanning services are presently available in 33 Missouri locations as illustrated in the appendix in the Diagnostic Radiology subsection. Placement of Scanners have generally been in larger secondary or tertiary care hospitals although some scanners have been placed in private offices.

Utilization surveys have been completed by individual HSAs including the Greater St. Louis Health Systems Agency CT Scanner survey, however, a statewide survey has not been assembled at this time. Additional, accurate information on machine type and utilization will be developed. The Annual Hospital Licensure Survey will also be an important source of information in that it will eventually include accurate information on the number and utilization of CT Scanning facilities. Finally, a number of other important issues involving concepts and definitions of radiologic technology need to be resolved between the planning and provider communities.

Conclusion

The indicator levels established in the National Health Planning Guidelines provide some guidance for an assessment of overall need for development of CT scanning services. However, since computerized tomography is a diagnostic rather than a treatment tool, there is no readily definable group of patients in need of the service. Without adequate data on the incidence of probable diseases which would determine the use of CT scanning, it is impossible to establish a reliable population based determination of need. In light of our inability to address current utilization and our charge to determine how such equipment should be operating, it is proposed that the Missouri State Health Plan establish both a set of desired characteristics and a basis for identifying and projecting demand. These are as follows:

DESIRED CHARACTERISTICS FOR DEVELOPMENT OF CT SCANNING SERVICES

1. Additional CT units should be made available when all CT units which are in operation or have been approved within a defined area of the population to be served are operating at optimum capacity as delineated in the Desired Projection analysis.
2. CT Scanners availability should be limited to those institutions which have capacity for clinical research, or which are major referral centers for neurological disorders or major oncology centers.
3. CT Scanners should be available in general community hospitals only when their efficacy has been proven as a basic diagnostic modality.

4. Referral networks should be established between the CT provider institution, physicians, and other medical institutions.
5. Data acquisition systems should be established to document utilization and to provide a tool for evaluation of both CT process and outcomes.

BASIS FOR IDENTIFYING AND PROJECTING DEMAND FOR CT SCANNING SERVICES

"Meaningful . . . utilization data are necessary for determining the cost/procedure and the need for CT services at an institution within a geographical region. Estimates of maximum utilization for an eight hour working day range from 14 to 32."⁵

On the basis of a detailed study of CT scanning practices Enloe and Ehlert at the Health Care Technology Center at the University of Missouri, concluded that CT utilization depends on four factors.⁶ These are:

1. Scheduled machine availability time, or scheduled operating time minus scheduled downtime: This could vary from one eight-hour shift per day, five days a week to two eight-hour shifts, six or seven days a week, minus any regularly scheduled maintenance period.
2. Scheduling efficiency: This is a measure of how "saturated" the CT suite is, defined as the percentage of scheduled machine availability time in which a patient is present.
3. The scan time, or time required for a full sweep of the x-ray beam: This varies from five minutes for two slices in the first-generation CT scanners, to one second per slice in recent models. The faster scanners may reduce markedly that amount of procedure** time which is spent in scanner activity. The difference in total procedure time is not always proportional to the difference in scan times, as there may be a tendency to record more images with a scanner requiring only 20 seconds than with a scanner requiring two and a half minutes.
4. The ratio of body scan procedures to head scan procedures. When data from whole body scanners were analyzed on the basis of site, there was a significant difference between the average time required for a head and a body procedure; body procedures averaged 50-60 percent more time than head procedures.

**Procedure is defined by the entry and exit of a patient into and out of the CT suite. A scan is the full sweep of the x-ray tube; may result in one or two 'slices' or images.

Table 3.5-5, provides desired utilization levels in terms of the number of patient procedures** per year for CT units with a variety of "slice times" and ratios of body to head scans. The assumptions which underlie these desired levels are that the unit is scheduled to operate 40 hours a week, 52 weeks a year, and that patients are present for scanning purposes 75 percent of the scheduled operating time. The table illustrates how slice time and ratio of body to head scans can greatly effect the maximum number of procedures possible per year.

TABLE 3.5-5
YEARLY CT SCANNER DESIRED UTILIZATION*

BODY/HEAD RATIO	SLICE TIME IN SECONDS							
	1	5	10	20	60	75	120	135
0-100	4010	3868	3697	3391	2564	2349	1875	1756
10- 90	3645	3512	3362	3092	2353	2158	1729	1622
20- 80	3333	3216	3083	2841	2173	1997	1607	1506
30- 70	3071	2967	2847	2628	2020	1857	1499	1407
40- 60	2846	2753	2644	2445	1886	1737	1404	1319
50- 50	2658	2567	2468	2285	1769	1632	1321	1242
60- 40	2488	2406	2315	2145	1665	1537	1247	1173
70- 30	2339	2263	2179	2022	1574	1454	1181	1112
80- 20	2192	2137	2058	1911	1492	1378	1122	1056
90- 10	2088	2023	1950	1812	1417	1311	1068	1007
100- 0	1985	1921	1851	1724	1351	1249	1020	961
Assumptions: 8 hours/day, 5 days/week, 52 weeks/year. 75 percent saturation of the schedule.								
*Based on data collected by the Health Services Research Center/ Health Care Technology Center, University of Missouri, Columbia, Missouri.								

It is expected that CT units with faster slice times (1'-20') and CT units with a predominance of head rather than body scans will operate at rates greater than 2,500 patient procedures per year and will approach the desired utilization rate identified in the table. CT units with slower slice times (75'-120') and with a greater number of body to head scans may be given special consideration if they exceed the desired utilization level identified on the table yet do not meet the 2,500 patient procedures per year minimum.

**One patient procedure includes, during a single visit, the initial scan plus any necessary additional scans of the same anatomic area of diagnostic interest.

Table 3.5-5 can be used to determine the number of procedures that must be performed yearly to obtain maximum utilization of 75 percent. For example, if a scanner has a 5 second slice time, and is used 20 percent of the time for body procedures, then the number of procedures necessary to yield a yearly maximum utilization of 75 percent would be 3216, assuming a work week of 8 hours per day, 5 days per week. The utilization standards set by this table should be easily attainable, and "effective scheduling and an efficient procedure may enable utilization to exceed this standard."⁷

Exceptions to the utilization standards could occur when "exceptional geographic constraints"⁸ would make easy travel to the scanner impossible or when an area equipped with a head scanner machine only plans to develop full body scanning services. In this latter case, the first whole body scanning machine would be treated as a first request for a scanner. While the desired utilization levels will not cover every case, any quantitative approach to medical decision making would have this problem. The major difficulty in the evaluation process is the requirement for historical utilization data for scanning facilities. However, since the Federal regulations require the establishment of a data acquisition system pursuant to CT installation, this requirement should be met.

Goals, Objectives, and Actions

Consistently applied, the methodology established here should eventually result in the achievement of standard utilization in nearly all proposed CT installations and at the same time allow advancements in medical research to expand the areas of application of these machines. The relationships of this methodology to the National Health Planning Guidelines is sufficiently explicit to demonstrate consistency.

GOAL: BY 1983, BOTH HEAD AND BODY COMPUTED TOMOGRAPHIC SCANNERS (CT) SHOULD OPERATE AT A DESIRED MINIMUM BASED ON THE SCAN TIME AND BODY TO HEAD RATIO AS ESTABLISHED IN TABLE 3.5-5.

GOAL: BY 1983, ADDITIONAL CT SCANNERS SHOULD NOT BE APPROVED UNLESS EACH EXISTING SCANNER IN A HEALTH SERVICE AREA IS PERFORMING AT A RATE GREATER THAN THE MINIMUM BASED ON THE MACHINE SCAN TIME AND BODY TO HEAD RATIO AS ESTABLISHED IN TABLE 3.5-5 AND THE OPERATORS OF THE PROPOSED EQUIPMENT WILL SET IN PLACE DATA COLLECTION AND UTILIZATION REVIEW SYSTEMS.

For the present edition of the Missouri State Health Plan, the adoption of the demand analysis methodology for CT Scanning is recommended.

Health Systems Agencies desiring to justify an exception or make an adjustment to the standards outlined in this section, must document such exceptions or adjustments. This analysis must be quantitative and consistent with the agreed upon approach. (See Guidance Document for Development of Health Systems Plans, Revised.)

ENDNOTES

¹Even, Ronald C.; and Jost, R. Gilbert; "Economic Analysis of Computed Tomographic Units," American Journal of Roentology, Volume 127: 191-198, 1976.

²Ibid.

³Even, Ronald C.; and Jost, R. Gilbert; "Economic Analysis of Body Computed Tomographic Units -- Including Data on Utilization," Radiology, Volume 127: 151-157, 1978.

⁴National Health Planning Guidelines.

⁵Enlow, Ronald A.; Ehlert, Karen; Glenn, William; Hodak, John; Rall, Kenneth; and Wilson, William J.; "Utilization of Computed Tomography Scanners and the Health Planning Issue: A Process Data Summary," Journal of Computer Assisted Tomography, April, 1978.

⁶Ibid.

⁷Ibid.

⁸Ibid.

IV. THERAPEUTIC RADIOLOGY

A. Overview and Analysis

Therapeutic radiology is a medical specialty in which ionizing radiation is used in treating patients with cancer or other neoplastic diseases. The intended outcomes of radiation therapy are palliation and/or cure. Palliation treatment does not destroy a tumor but allows for relief from pain caused by a tumor and in some cases can prevent the spread of cancer to healthy tissue. Cure, of course, is the most desirable outcome of radiation therapy.

Radiation therapy services can be divided into three major categories:¹

1. External irradiation. Irradiation from sources at a distance from the body.
2. Local irradiation. Irradiation from sources in direct contact with the tumor.
 - a. Surface irradiation with applicators loaded with radioactive material for the treatment of certain oral and skin tumors.
 - b. Intracavity irradiation with radioactive material in removable applications which are inserted into body cavities, such as the uterus or sinus.
 - c. Interstitial irradiation by radioactive sources placed in the tissue. This may involve removable needles, non-removable "seeds" of radioactive material, small radioactive sources in nylon sutures, or radioactive wire.
3. Internal or systemic irradiation. Irradiation by radioactive sources administered intravenously.

The most common type of irradiation is the external type. The analysis and the National Guidelines will center around this radiation technique.

Radiation equipment is generally divided into three types:²

<u>TYPE</u>	<u>ENERGY RANGE</u>	<u>RADIATION SOURCE</u>	<u>USE</u>
SUPERFICIAL	85-180 Kilovolts	x-rays	Used to treat lesions on and immediately beneath the skin.

<u>TYPE</u>	<u>ENERGY RANGE</u>	<u>RADIATION SOURCE</u>	<u>USE</u>
ORTHOVOLTAGE	200-400 Kilovolts	x-rays	Formerly called "deep x-rays". Poor depth dose and preferential absorption in the bone limit use.
MEGAVOLTAGE	2-50 megavolts	x-rays or gamma rays	Used to treat deep-seated tumors.

The three types of radiation equipment are used for tumors with differing characteristics. However, the present state of the art and our concern here, is the use of megavoltage equipment for irradiating deep seated tumors. The high energy beam produced by these machines actually causes less damage to the skin, surrounding tissues, bones, and major organs than does treatment by the lower voltage machines. The most common megavoltage equipment fall into three categories:³

<u>UNIT</u>	<u>ENERGY RANGE</u>	<u>TYPE OF RADIATION</u>	<u>CHARACTERISTICS/DESIGN FEATURES</u>	<u>APPROXIMATE COST</u>
COBALT 60	1.5 megavolts	Gamma rays from cobalt source (radioactive isotope)	Reliable. Source decays and consequently must be replaced every 3-5 years. Should be at least 80 cm. distance between source and patient. Source may be fixed or rotational. Can treat 25-35 patients/day.	\$75-115,000/unit. \$25-30,000/source
LINEAR ACCELERATOR	4-35 megavolts	x-rays electrons	Current models fairly reliable (earlier models substantial 'down time'). Should be 1 meter distance between source and patient. Source may be fixed or rotational. Can treat 40-45 patients/day.	4 Mev-20 Mev from \$200-500,000 35 Mev about \$1,000,000

<u>UNIT</u>	<u>ENERGY RANGE</u>	<u>TYPE OF RADIATION</u>	<u>CHARACTERISTICS/ DESIGN FEATURES</u>	<u>APPROXI- MATE COST</u>
BETATRON	25-50 mega- volts	x-rays electrons	Found less often in clinical prac- tice than are linear accelerators or Cobalt 60s. Very reliable. Low output. Can treat 40-45 patients/day.	\$400,000- 1,500,000

The most common types of megavoltage equipment are the cobalt unit and the linear accelerator. The cobalt unit has been used longer than the other types of equipment and is less expensive to operate. However, linear accelerators are being utilized increasingly. While the expense of accelerators is high, the machine capability is greater. Linear accelerators are utilized mainly in the treatment of deep-seated tumors while cobalt units are employed for less serious tumors or for palliation purposes.

Linear accelerators are of two types, those with electron capability and those without electron capability. The linear accelerator with an electron capability is a highly sophisticated unit normally found in major cancer centers such as Ellis Fischell State Cancer Hospital in Columbia. The linear accelerator without electron capability usually falls in the 4-6 megavolts power range and frequently replaces the cobalt unit.

System Considerations

Radiation Therapy services should be available and accessible in a manner that permits the effective utilization of equipment and procedures. Cost effective, safe, and appropriate utilization should take place as normal considerations. What this means is that highly expensive radiation therapy equipment should be placed only in those locations or settings where individuals will derive clear benefit. It has been estimated that nearly 80 percent of cancer patients treated could be seen in the ambulatory setting, a less expensive alternative to hospitalization and quite often a convenience for those requiring daily treatment.

A network of affiliated institutions offering differing levels of services is basic to a functional radiation therapy system. A number of different systems have been proposed. However, the important aspect is not whether there is a three tier or two tier system but that each part of the system is an equal and independent part of the network offering quality services within the limitations of its capabilities.

One part of the network should provide major training and clinical therapy facilities with the capability for basic research. This type of center(s) would provide consultation for smaller "satellite" facilities. These smaller facilities would provide an optimum level of care although they may lack some specialized resources. These centers would also serve as a referral point to the larger more specialized radiation therapy centers.

B. National Health Planning Guidelines

Radiation Therapy

It has been estimated that half of new cancer patients require radiation therapy with many of these requiring subsequent treatment. While various types of radiation are used for tumors with different characteristics, megavoltage equipment is accepted as the most efficacious for treatment of deep-seated tumors.

National Standards

- a. A megavoltage radiation therapy unit should serve a population of at least 150,000 persons and treat at least 300 cancer cases annually, within three years after initiation.
- b. There should be no additional megavoltage units opened unless each existing megavoltage unit in the health service area(s) is performing at least 6,000 treatments per year.
- c. Adjustments downward may be justified when travel time to an alternate unit is a serious hardship due to geographic remoteness, based on analysis by the HSA.

Discussion

Two utilization standards and one statement of exception have been established for radiation therapy services. A three-year phase-in period for radiation therapy units has been proposed. As referred to in the standards, a unit is a single megavoltage machine or energy source and treatments are the same as patient visits. As defined in the "National Health Planning Guidelines," "a megavoltage radiation therapy unit should serve a population of at least 150,000 persons, or at least 300 new cancer cases per year. Furthermore, new megavoltage units should not be allowed to open unless each existing or approved unit in a health service area is operating at a capacity of at least 6,000 treatments per year. These minimum indicator levels have been established to provide necessary treatment capabilities while preventing duplication of radiation therapy units and underutilization of existing capacity."⁴ Generally, the desired levels should be exceeded, and in fact, many institutions now meet or exceed these indicator levels.

Since radiation therapy equipment is variable in size, standards have been developed for low-energy units (rotational 80 cm SAD or greater cobalt - 60 and 4-10 MEV linear accelerators without electron beams), medium-energy units (11-20 MEV linear accelerators with electronic beams),

and high-energy units (linear accelerators and betatrons above 20 MEV). All other dedicated special purpose and extra high energy machines (particle accelerators, neutron generators, and radiation therapy treatment simulators) which have limited but important applications should not perform more than 6,000 treatments per year due to possible limited capability. These units should be evaluated individually.

Current System

Presently available radiation therapy services are disjointed and uncoordinated. Many hospitals, physicians offices, and some clinics have radiation therapy equipment including superficial, orthovoltage, and megavoltage types. Meaningful information as to the exact location, equipment, type, and utilization of radiation therapy services has not been assembled at this time. Some information on equipment is available, but cannot be verified. Improvements in the annual hospital licensure survey and inspections by the Bureau of Radiological Health of the Division of Health should improve data acquisition capabilities in the future.

Conclusion

Megavoltage equipment is expensive to purchase, install, and support on a continuing basis. Therefore, every effort should be made to avoid duplication. Without a common and meaningful data set for radiation therapy equipment and utilization, a reliable estimation of need is impossible to establish at this time.

Goals, Objectives, and Actions

The indicator levels, as established in the National Health Planning Guidelines, should provide sufficient flexibility to allow for additional radiation therapy services as needed while containing costs and maintaining a high level of care.

GOAL: BY 1983, ALL MEGAVOLTAGE RADIATION THERAPY UNITS SHOULD SERVE A POPULATION OF AT LEAST 150,000 PERSONS AND TREAT AT LEAST 300 CANCER CASES ANNUALLY.

GOAL: BY 1983, ADDITIONAL MEGAVOLTAGE UNITS SHOULD NOT BE OPENED UNLESS EACH EXISTING MEGAVOLTAGE UNIT IN A HEALTH SERVICE AREA IS PERFORMING AT LEAST 6,000 TREATMENTS PER YEAR.

For the present edition of the Missouri State Health Plan, the adoption of the National Guideline standards for radiation therapy is recommended.

Health Systems Agencies desiring to justify an exception or make an adjustment to these standards, for their health service area, must document such exceptions and/or adjustments. This analysis must be quantitative and consistent with the agreed upon approach. (See Guidance Document for Development of Health Systems Plans, Revised.)

ENDNOTES

¹Carol Hansen Baker, Criteria and Services for Radiation Services; University of Washington, December 1975, p. 19.

²Ibid., p. 20.

³Ibid., p. 99.

⁴National Health Planning Guidelines.

V. CLINICAL LABORATORY SERVICES

To be addressed in future editions of the Missouri State Health Plan.

VI. EMERGENCY MEDICAL SERVICES

Introduction

The primary purpose of an emergency medical services (EMS) system is to provide appropriate care in "responding to the perceived individual need for immediate medical care in order to prevent loss of life or aggravation of physiological or psychological illness or injury."¹

Time is an important factor in the survival rate, especially from motor vehicle accidents. In rural areas, the time distance factor increases mortality rate. "Even though the motor vehicle accident rate is similar for urban and rural areas (about twenty accidents per 1,000 population), the chance of dying as a result of a motor vehicle accident is greater in rural areas such as Area V. Some 70 percent of all motor vehicle accident fatalities in the United States occur in rural areas with the remaining 30 percent occurring in urban areas."²

In recent years, significant changes in Missouri's emergency medical services system have occurred, especially in ambulance services. Funeral home operated ambulance services have been decreasing while public operations through counties, cities, ambulance districts, and hospitals have been increasing.

Desired System

Availability

Ambulance services should be available within 25 miles of everyone in the state. First responders with training as Emergency Medical Technicians (EMT) should be available to stabilize a patient's condition until an ambulance arrives. At least two EMTs should be available through every fire department (especially volunteer fire departments) in Missouri.

Accessibility

Accessibility to the Emergency Medical System is important. One mechanism for improving citizen access is through the installation of a universal, emergency 3-digit telephone number capability (911). Another method of extreme importance to the success of access to the system is public information and education. Educational materials (e.g., films, slides, spot commercials, brochures) should provide information on how to access the system and how an EMS system improves medical services. The elimination of delay in accessing the EMS system may mean the difference between life and death.

* = will not be addressed at this time.

Quality

The EMS system should have the capability of providing a range of essential care from the site of the illness or accident, during transit to the hospital emergency department, to the patient's discharge from the emergency department. The EMS system should include an adequate number of appropriately trained personnel who can reach the scene quickly, capably stabilize the victim at the scene, communicate directly with a hospital, and transport the victim to the appropriate hospital capable of meeting the patient's needs.

The quality of care received by a person in need of Emergency Medical Services depends on a continuum of services which are provided by a range of health care providers and the public. The Bureau of Emergency Medical Services (BEMS), Division of Health describes an Emergency Medical Services System as follows:³

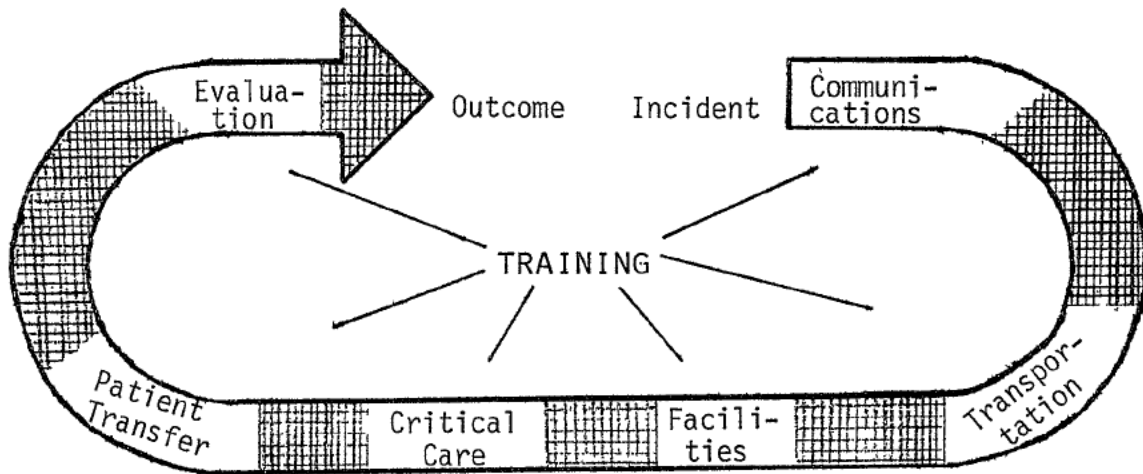
The Emergency Medical Services Act of 1973 (P.L. 93-154 amended P.L. 94-573 in 1976) established the following 15 components to be addressed by a federally funded EMS system:

1. Manpower
2. Training
3. Communications
4. Transportation
5. Facilities
6. Critical Care Units
7. Public Safety Agencies
8. Consumer Participation
9. Accessibility to Care
10. Transfer of Patients
11. Standard Medical Record-Keeping
12. Public Information and Education
13. Evaluation
14. Disaster Linkage
15. Mutual Aid Agreements

Of these 15 components, seven are of crucial importance to the success of a systems approach to providing emergency medical services. These seven components are crucial because they directly impact patient care.

An EMS system can be summarized in terms of how a patient flows through the system according to the following seven component diagram:⁴

FIGURE 3.5-1
 PATIENT CARE FLOW⁵
 SEVEN COMPONENTS



First, someone from the general public will come upon the accident scene. This individual will go to the nearest telephone and will know what number to call because 911 or single access will be in effect and an effective public information program will have informed him what number to call. If he goes to a public telephone, a sticker will tell him what number to call.

Secondly, the call will go to the central dispatching system, which will instantaneously relay the message to the ambulance service closest to the accident scene. The dispatcher will have sufficient EMS training to be able to appropriately medically prioritize the call.

Third, the ambulance will be in excellent condition and will be well equipped (meeting American College of Surgeons requirements) because the vehicle will have been inspected by the Bureau of Emergency Medical Services. If it is a state placed vehicle, all appropriate specifications will be met.

Fourth, the personnel responding to the scene will be adequately trained. Quite likely, they will have received training only under courses meeting Bureau of EMS and DOT requirements. They will have been tested and certified by state developed examinations and will receive refresher training and undergo state testing every three years.

Fifth, the ambulance personnel will utilize the mobile radio equipment to contact the nearest hospital. This hospital will be equipped with the Hospital Emergency Administrative Radio (HEAR) system or its equivalent and will be able to phone patch to inwards WATS lines the ambulance personnel's call to a medical control center where 24 hour physician coverage will exist. Ambulance personnel will be able to be in direct voice contact with a physician at any time of the day or night.

Sixth, once the patient has been initially stabilized, he will be taken to the closest appropriate hospital. The capabilities of the hospital's E/R will be known in advance because it has been categorized according to AMA criteria.

Seventh, at the emergency room the patient will be seen by a physician whose emergency medicine skills have been refreshed by attendance at emergency medical physician seminars. If there is no emergency physician at this particular emergency room, a nurse trained in emergency critical care will be on duty.

Eighth, once the patient is further stabilized, he would either, according to transfer agreements and protocols developed at the regional level, a) stay at that hospital, or b) be moved to a more appropriate hospital, or c) be moved to a critical care center (trauma, cardiac, burn, spinal cord, neonatal, psychiatric, or poison). The location of these critical care facilities will be known in advance because transfer agreements and triage protocols will be in effect. The transfer agreement, triage protocols, and treatment protocols will insure acceptance of patient care responsibilities by the receiving institution and protect the transferring facility and physician from "abandonment liabilities."

Ninth, as the patient recovers he may be transferred to appropriate long term care institution or appropriate outpatient facility for convalescence.

Tenth, evaluation of the patient's outcome will be possible because tracer studies will be possible for all seven critical care categories because the Bureau of EMS will have developed a special E/R report form and a new ambulance trip ticket. Also, the Bureau's acquisition of a recorder compatible with the logging recorder in each region will enable medical evaluation of the medical control center, the ambulance run, the performance of ambulance personnel, and the response of the system to the incident.

The ingredients that will make the above scenario work will be: 1) the State Communications Plan, which establishes medical control, 2) training funds for EMS training and coordination, 3) identification of critical care units and development of protocols and transfer agreements, 4) public information and education programs on how to access the EMS system, and 5) acceptance by hospital E/Rs of the critical care patient report form and ambulance trip ticket for evaluation of the EMS system.

An important ingredient is the categorization of emergency facilities. Efforts should be made to coordinate activities to ensure that categorization efforts undertaken at the local level do not conflict with the overall state efforts. A suggested method is to categorize emergency facilities along three approaches: horizontal, vertical, and circular.

"Horizontal categorization establishes hospital emergency rooms as either 1) basic (adequate equipment but no 24-hour physician coverage); 2) general (has 24-hour physician coverage); or 3) comprehensive. Horizontal categorization should be largely the responsibility of the EMS regional councils and their staffs. Vertical categorization establishes critical care unit capabilities by type of service it can render - trauma, burn, spinal cord, high risk infant, acute coronary, poison, and behavior. Circular categorization identifies the interrelationships between emergency rooms and critical care units so as to provide an even continuum of care for the patient at the most appropriate facility."⁶

TABLE 4.5-6
SAMPLE MATRIX FOR HORIZONTAL/VERTICAL
CATEGORIZATION WITHIN EMS REGIONS (CIRCULAR)⁷

Horizontal		Critical Care Capability-Vertical						
Gen. Emer. Classification*	Name of Hospital	Trauma **	Spinal Cord	Burn ***	**** Acute Coronary	High Risk Infant	Poison Info. Service	Behavioral
I								
II								
III								
IV								

*American Medical Associations

**American College of Surgeons

***American Burn Association

****American Heart Association

The Bureau of Emergency Medical Services (BEMS) recommends the use of the American Medical Association criteria for Emergency Rooms in categorizing Emergency Rooms as Level I, II, III, or IV. Critical Care Unit capabilities (vertical) should meet recommended criteria by type of service (see Table 3.5-6). Poison centers should have the capacity to recommend treatment as well as give information. This would require that trained nurses take calls and a toxicologist be available 24 hours a day.

Continuity

"Transfer agreements and protocols should be developed to handle the interrelationships of the three types of emergency facilities. Medical care consultants at the state level should develop an overall strategy for vertical categorization and should develop guidelines for written transfer agreements and protocols. The medical care consultant for each EMS region should be responsible for implementing vertical categorization, transfer agreements, and protocols for that EMS region. Thus, medical care consultants should be used at both state and regional levels."⁸

An important ingredient in the effectiveness of an EMS system is its communications capability. Under a comprehensive system:

"all hospitals should be equipped with the HEAR system** or its equivalent and all ambulances should have compatible mobile radio equipment. Thus, any ambulance will be able to communicate with any hospital within radio range. Furthermore, two inward WATS lines should be installed at selected medical control centers where there would be 24-hour physician coverage in the emergency department. Thus, a rural hospital near the emergency/accident scene would be able to phone patch emergency medical technician ambulance personnel into the medical control center so that the technician can be in direct voice contact with a physician at any time day or night."⁹

Cost*

Acceptability*

**HEAR refers to the Motorola system where the capability exists for the ambulance personnel to speak directly to a hospital through a common statewide frequency.

Comparative Analysis

Quality

The Bureau of Emergency Medical Services (BEMS), Division of Health, is the lead agency in the planning and evaluation of Emergency Medical Services in Missouri. Their major functions are: planning for state-wide services, regulation of some services (ambulances), provision of certain kinds of equipment, and developing educational programs for emergency medical personnel.

In 1974, the State of Missouri was divided by DHEW into seven Emergency Medical Services Regions. The seven regions are at various stages in their development. The purpose of these Regional Councils is to develop, implement, and continue EMS systems. Their primary role is to evaluate the system as it currently exists in their region.

Consultants to each Regional Council include a medical director and seven critical care consultants. The BEMS also provides assistance to the regions. These Regions are formed locally and are federally funded. However, the federal funding intended for limited planning periods is decreasing. A new source of funding will be needed to continue these Councils.

The point of entry to the system, communication of the need for Emergency Medical Services, will be discussed under accessibility.

All ambulance vehicles in the state are inspected annually and must carry the equipment recommended by the American College of Surgeons. State placed vehicles are inspected every 90 days.

"Training attendants in the ambulance service industry is continuously needed because of high turnover rates and skill deterioration within services which experience a relatively low volume of calls."¹⁰ Of the over 6,200 attendants and attendant/drivers licensed in Missouri, over 75 percent have taken the 81 hour Emergency Medical Technician course. The rest have taken the advanced first aid course which is the minimal requirement for licensing. BEMS recommends that the licensing regulations should be upgraded to require the 81 hour EMT course. Currently there are 70-80 EMT courses, 10-15 EMT refresher courses and 10 MEMT (Mobile Emergency Medical Technician) courses available throughout Missouri. All courses must be state approved if they are to lead to licensure. The Bureau of EMS can provide training to areas of the state where training is unavailable locally. At the present time, 900 ambulance personnel have been licensed as Mobile Emergency Medical Technicians.

Air Ambulances are not currently licensed or regulated in Missouri. The potential for use of this service in thinly populated areas is great. The costs of operating a service are extremely high (an estimated \$3,000,000 to get 5 helicopters operating in 3 locations). A multi-agency system is being explored by BEMS.

Emergency facilities are not regulated by the Bureau of Emergency Medical Services. The 7 EMS regions are currently categorizing their area Emergency facilities by the 4 levels shown on Table 3.5-6.

Critical care units for treatment of six of the seven medical conditions shown on Table 3.5-6, trauma, spinal cord, burn, acute coronary, high risk infant, poison, and excluding behavior are identified on maps 1 through 5 (see Appendix, Section 3.5, Emergency Medical Services subsection). There are no burn centers officially designated by BEMS although there are hospitals in the state that treat burn patients. Behavior centers are not currently designated.

There are 14 poison information centers in the state. Currently, none of them meet the criteria under desired system. A lesser number of poison control centers meeting the standards of the federal EMS act could provide a planned treatment course (over the telephone) rather than just information.

Availability

There are 681 licensed ambulance vehicles in the state. The state has played an active role in the development of transportation of emergency patients by placing 407 ambulances in Missouri. Although the Bureau does not operate medical care facilities, all hospitals licensed by the state (approximately 160) have emergency rooms which are currently being categorized by the seven EMS regions. The location of the critical care units has been described.

Accessibility

All ambulance services which have been supplied ambulances by the state are required to contract to respond to request for service, regardless of age, sex, race, or ability to pay. Furthermore, it is the individual on the scene and not the ambulance dispatcher who determines whether or not an emergency exists. However, licensure laws do not provide grounds for the revocation of licensure for failure to provide service by private, non-state provided ambulances.

Communication systems are important in accessing the Emergency Medical services system. The 911 access system (emergency number) exists in limited areas of the state (Columbia, Mexico, St. Joseph, Blue Springs, Lake Ozark, St. Charles, Joplin, Poplar Bluff, and Cape Girardeau).

Springfield and St. Louis City and County are in the process of implementing this system. In addition, there is little coordination among ambulance dispatching facilities in the state. A central dispatch system would bring greater coordination among services.

Continuity

Because there is no Missouri State law requiring communications between ambulances and hospitals, development of a communications system has been haphazard.

"With increasing legislation regulating ambulance personnel and vehicles, many private ambulance services were and, though somewhat fewer now, are unable to financially provide the service. There are still areas in Missouri where private operators provide the only available ambulance service. In general, private operators have less communications resources than their political subdivision or hospital counterparts. Private operators, in the past, cannot be expected to purchase communications equipment that will meet state guidelines. They should be encouraged to purchase that equipment which they can afford.

Most mobile communications equipment in use has the most universal state EMS frequency of 155.340 MHz and a 1500 Hz digital dial encoder. Beyond that, the capabilities and capacities of individual systems vary greatly. Probably the next most often frequency used is 155.730 MHz, a police frequency that most of the 114 county sheriff's and many of the rural municipalities have. This frequency is often used as a dispatching command and control frequency for the ambulance services. There are no central EMS dispatching entities covering an area larger than two counties which accounts for the use of many channels rather than a single dedicated frequency.

Practically all EMS providers with communications systems have one way radio paging systems to alert personnel. This time saver has presented interference problems in the St. Louis and Kansas City areas. But, even on Special Emergency Radio Service frequencies, interference from paging seldom occurs in the rest of the state. A few hospitals have one way Special Emergency Radio paging frequencies but they haven't gained widespread use because few know they exist."¹¹

Acceptability*

Cost*

Problem Description

1. Legislation requires that all ambulance personnel be licensed by the Bureau of Emergency Medical Services and that the licensure be renewed every three years. In order to obtain relicensure, specific qualification procedures at each level (advanced first aid, emergency medical technician, and mobile emergency medical technician) must be met. Current legislation, however, does not allow for revocation of licensure even for repeated offenders of negligent conduct.
2. Early care at the site of the accident or illness should be provided by first responders fully trained as Emergency Medical Technicians. If at least two are located in each volunteer fire department, they have the capacity to reach the scene more rapidly than an ambulance. The number of people capable of functioning as first responders needs to be increased throughout the state.
3. A problem encountered in moving from the current system toward the desired system is the lack of funds, especially in many rural communities, to purchase equipment and to obtain trained personnel. Funding will need to be available to at least maintain the current level of activity; a discontinuance of the supportive activities would mean the emergency medical services system in many areas of the state would deteriorate and revert back to previous levels of inadequate care.
4. In order for an Emergency Medical Services System (EMS System) to most effectively reduce mortality and morbidity, it must effectively coordinate its various components. These components address citizens access and education, cardiopulmonary resuscitation training, ambulance vehicle specifications, radio communications between ambulance and hospital personnel, hospital emergency departments and critical care capability, medical evaluation, and training for ambulance and hospital personnel. The state has played an active role in obtaining federal grant funds in order to improve these various components of an EMS System and provide central coordination so that the most effective response to emergencies can be made.
5. There is a network of poison information centers covering the state. However, these poison information centers in no way qualify to be poison control centers from the federal perspective.¹² A consolidation of the poison information centers is needed to provide adequate resources in order to have 24 hour coverage by toxicologists, serving larger geographical areas.

6. The communications system of the emergency medical services system throughout the state is inadequate. Citizen access to report an emergency, a central dispatch system for ambulances, and communications between ambulances and hospitals (particularly medical control centers) needs to be improved.
7. Reporting forms have not been standardized. These forms could improve patient care and make possible an evaluation of the system.

Goals, Objectives, and Actions

GOAL: TO PLAN, DEVELOP, AND IMPLEMENT A TOTALLY COORDINATED EMERGENCY MEDICAL SERVICES SYSTEM THAT IS AVAILABLE TO EVERYONE IN MISSOURI.

OBJECTIVE 1: By 1981, a statewide 911 or single access number should be implemented.

Recommended Action 1: The Division of Alcoholism and Drug Abuse should assist the Bureau of Emergency Medical Services in expanding the use of 911 single access number to include emergency detoxification and other alcohol and drug abuse related crises; and in educating the public regarding the use of the 911 access number.

OBJECTIVE 2: By 1983, the Bureau of Emergency Medical Services (BEMS) should coordinate and develop a state EMS communications plan which includes ambulance-to-hospital communications, medical control, central dispatch, and interface with Public Safety.

OBJECTIVE 3: By 1980, the BEMS should develop public information and education programs which utilize telephone stickers, informational brochures, public presentations, filmstrips, and the media.

OBJECTIVE 4: By 1980, the current Emergency Medical Services legislation should be amended to include patient care standards in order to revoke personnel licenses for repeated offenses of negligence.

OBJECTIVE 5: By 1980, the state legislature should appropriate adequate funding to keep the coordinated systems approach of the seven EMS regions on-going once Federal funding is lost, through a cost-matching procedure with local areas.

OBJECTIVE 6: By 1980, legislation should be passed requiring all ambulance personnel to be minimally trained in the Department of Transportation 81-hour course or its equivalent.

OBJECTIVE 7: By 1981, the Bureau of Emergency Medical Services with the advice and assistance of the Missouri Hospital Association should establish a standardized Emergency Room form used by all emergency facilities throughout the state.

Recommended Action 1: The Bureau of Emergency Medical Services should work with the Division of Alcoholism and Drug Abuse on the incorporation of the Drug Abuse Warning Network reporting items in the standardized Emergency Room form.

ENDNOTES

¹U.S. Department of Health, Education, and Welfare; Emergency Medical Services System: Program Guidelines, DHEW Publication No. (HSA) 75-2013 (February, 1975), p. 2.

²Missouri Area V Health Systems Agency, "Missouri Area V Health Systems Plan, 1978."

³Missouri Division of Health, Bureau of Emergency Medical Services, "An EMS System for Missouri," FY 1980.

⁴Ibid.

⁵Ibid.

⁶Ibid.

⁷Ibid.

⁸Ibid.

⁹Ibid.

¹⁰Ibid.

¹¹Ibid.

¹²Ibid.

VII. OUTPATIENT SERVICES

Introduction

This year's edition of the Missouri State Health Plan will address only primary care issues as they relate to the delivery of services in the outpatient setting.

Primary Care

Introduction

Alternative solutions to the problems associated with ill health in today's society are described elsewhere in this plan as primarily involving the responsibility of the individual. From another perspective, society's responsibility, through both public legislation and private initiatives, is also a significant part of the solution. This concept suggests that it is the obligation of the individual to care for himself, and when necessary, to appropriately utilize health care services. It is the responsibility of society, both government and private citizens, to provide information and accessible health care services which are reasonably affordable. It is to this second obligation that this section relates.

The focus on primary care as a part of the solution to this obligation is essential, because primary care services include routine treatments for a majority of today's health problems. The concern about primary care is shared by many at the national, state, and local levels. Indeed, in 1975, the U.S. Congress identified the provision of primary care services for the medically underserved population, especially those located in rural and 'economically depressed areas,' as a number one priority. The Missouri General Assembly recently debated several proposals dealing with manpower and other key considerations for the delivery of primary care services. All health systems agencies in Missouri through their public forums and health systems plans have mentioned problems with the current primary care delivery system.

The first step is to understand what range of services and manpower primary care encompasses. "The term 'primary care' is normally used to describe the range of services traditionally (emphasis added) rendered by physicians in the community practice."¹ Definitions range from this rather simplistic one, where almost all physicians become 'primary' at one time or another, to long discussions of specific disease categories. Perhaps the definition that is most direct is that of the American Academy of Family Physicians:

Primary care is a type of medical care delivery which emphasizes first contact care and assumes ongoing responsibilities for the patient in both health maintenance and therapy of illness. It is personal care involving a unique interaction between the patient and the physician. It's comprehensive in scope and includes the overall coordination of the care of the

patient's health problems, be they biological, behavioral, or social. The appropriate use of consultants and community resources is an important part of effective primary care.

Today, primary care remains the point of entry and first contact with the health care system, once the consumer has decided medical care is required. The provider of first contact, whether a physician or other skilled practitioner, will care for the consumer over time, and when necessary, act as his advocate in referral to other service settings, either physical or mental.

In general, primary care represents 80-90 percent of the health care services utilized. This includes diagnosis and treatment of uncomplicated illness and disease, home care, ambulatory services, surgery, minor emergencies, and dental services.² In addition, primary care includes 'wellness-oriented' activities such as promotion of the individual's responsibility in terms of health maintenance, education, and prevention activities.

Desired System

Availability/Accessibility

The central questions become whether health care is available to those who need it and what barriers must be overcome to obtain care. In the jargon of today's health care, this crucial issue is labeled 'access' to care. Access issues translate into a number of questions which together determine whether or not persons obtain the care they need. Is the practitioner available? How far is it to his office? How long does it take to get an appointment? How long will the practitioner be seen and how much will it cost? How will the bill be paid? And was the patient satisfied with the visit?

Understanding the extent and scope of the problems is a basic key to developing solutions. Rural residents face some problems (e.g., geography, transportation, and manpower) which are different from urban residents, yet other issues (education, access, and lack of funds) face both areas equally.

A discussion of desired 'access' to primary care in Missouri inevitably leads to a discussion of health manpower availability and Missouri's numerous medically underserved areas. Section 3.9 of the State Health Plan offers a more detailed analysis of manpower issues whereas this section will only address primary care practitioners. The literature offers guidance on 'appropriate' practitioner-to-consumer ratios. The following guidelines have been selected as the desired ratios in primary care practitioner manpower.

physician total:population

- general practitioner = 25/100,000 population
 - internist = 12.5/100,000 population
 - obstetrician/gynecologist = 8/100,000 population
 - pediatrician = 10/100,000 population
- total = 55.5/100,000 population³

It would also be desirable that the legislative programs necessary to define and enable the appropriate uses of various levels and skills of physician assistants and nurse practitioners are developed and enacted. In so doing, the expanded use of these personnel in the 'team approach' can be legitimized.

Another key issue associated with 'access' is the ease with which the practitioner and the client are brought together. In order to facilitate better 'access' the desired system of primary care services would have the following characteristics:

- services provided 24 hours per day either on site or by contract;
- general appointments scheduled within two weeks;
- location within reach of public transportation, {elderly residents should be able to gain access through Older Americans Transportation Services (OATS)};
- geographic proximity such that no Missouri resident is so distant from primary care that travel time is a barrier to accessibility.

Continuity

A second major issue is continuity of care and coordination of physical and mental health services. Primary care services include not only care for the physically ill, but also include care for emotional trauma, especially when this trauma results in physical illness. Service entities must be prepared to accomodate this broader emphasis which can best be explained through the concept of 'holistic care.' Holistic care means "viewing a person and his wellness from every possible perspective, taking into account every available concept and skill for the person's growth toward harmony and balance."⁴ It means treating the person, not the disease. It is not an alternative to conventional medical practice. Rather, it combines the best of modern medicine with a sound life style. In holistic care, the physicians make the diagnosis

and treat symptoms just like their colleagues in conventional medical practice. In addition, the practitioners are looking for, and dealing with, the nonbiologic causes of the problems as well.

Much of the literature on primary care services has advocated the 'team approach' in the delivery of primary care services. This 'team approach' can effectively utilize different skill levels among different kinds of practitioners in order to deliver comprehensive and holistic care services. These team practitioners can include but are not limited to: physicians, nurses and nurse practitioners, technicians, physician assistants, health educators, psychologists, and nutritionists. Where the in house care by these varied practitioners is not feasible, a referral network should be available. In the comprehensive and holistic primary care model, a primary care service should be able to offer or refer a client to the following services in a manner which maintains continuity in the care of the client.

- a. medical care services (in house or on referral)
 - basic diagnosis by a primary care practitioner
 - diagnostic laboratory and radiology
 - emergency services
 - access to acute inpatient care
 - access to home health services
 - dental services including diagnosis, treatment, and prevention
 - pharmacy services if a private pharmacy is not available
- b. health and holistic care services
 - information and referral for services outside the primary care setting
 - screening for basic diseases, vision, and hearing
 - immunizations
 - maternal and well-baby programs
 - alcoholism and drug abuse counseling
 - care for emotional problems
 - nutrition counseling
 - legal and social services (referral and/or services)

Cost

A national study is now being completed which will indicate the extent to which access is a problem in primary care delivery. The early findings of the report are significant. "Americans of all ages, of all races, of all income levels have greater access to health care services than ever before. And by and large, individually, they are pleased with the care they receive."⁵ The survey investigates five principal issues in access: source of care; utilization of care; need for care; the patient's satisfaction with care received; and cost of care. No issue rivaled cost as a cause of dissatisfaction (37 percent dissatisfied).

Findings from the Governor's Task Force on Rural Health stated that medically underserved counties in Missouri had more families below the poverty level, a high percentage of people over 65, a higher infant mortality rate, and a lower ratio of physicians to population than the remainder of the state. Many of these underserved counties (most of which are rural) also had no Medicaid facilities while containing a high percentage of eligible recipients.⁶ Low per capita income and lack of Medicaid reimburseable facilities have led to problem issues in financial accessibility. Barriers to financial accessibility should be lifted where possible.

It has been found that the use of alternative settings for the delivery of primary care has feasibility both in terms of cost-effectiveness and consumer familiarity. Such settings are found in the hospital and the local public health unit.

Traditionally, the hospital has cared for those consumers with acute and/or emergency conditions. Over time, the hospital's location and the services provided are utilized and, therefore, known to virtually all citizens. If one of the objectives of primary care is to make available certain health and wellness services at a known and accessible location, the hospital may well be a logical choice. Utilization of unused rooms and ancillary space would help the financial position of the hospital and the community's health system economy as well. Other possible advantages include:

1. shared administration - cost efficient and quality effective;
2. shared ancillary services and medical personnel;
3. convenient location for physicians and known by consumers;
4. convenient to local transportation; and
5. increased continuity and utilization of a wide range of experience.

In view of the fact that the public has been given incentives to utilize the hospital, perhaps the recommended change should be in the range of services offered in the facility rather than in the perceptions and habits of the consumer.

The feasibility of expanding the use of rural public health units in the delivery of primary care services should be determined and, where possible, a program for implementation should be developed.

Possible areas for expansion of services include:

1. family counseling and patient advocacy;
2. extended wellness training;
3. extended school age health education/community health education;
4. community service referral center;
5. use as an umbrella agency (shared administrative and support services for various community service agencies); and
6. preventive medicine.

With expanded manpower capabilities, the public health units would be able to reach population sub-groups (not only the poor or the aged) who presently enter the health care system only when illness or disability becomes acute. It is in this area that real dollar savings can be made through the use of preventive methods.

Quality*

Acceptability*

Comparative Analysis

Availability/Accessibility

With respect to manpower, the Statewide Health Coordinating Council has stated that the problems are not so much those of total numbers of personnel as much as their distribution and medical specialty. Although a majority of illnesses require only general medical care, the proportionate number of physicians practicing 'general' medicine has been decreasing for decades. With increased specialization, middle-class families in the cities often have difficulty in locating a general care practitioner. Map 1 located in the appendix under Section 3.5, Out-patient Services, describes the ratio of primary care physicians to total physicians by county.

Each of Missouri's Health Systems Plans addresses the primary care needs in their areas. Central to their discussions of primary care is an analysis of their physician manpower needs.

- HSA I "The combined primary care physician-to-population ratio in MAHSA's rural portion is 1:2770 (72 physicians for 199,300 people). While not falling in the range (less than 1:3000) which could qualify for federal designation as a primary care manpower shortage area, the ratio is inconsistent with desirable historical levels of primary care manpower, and it is 75 percent lower than its urban-suburban counterpart. Thus, the overall rural ratio of 1:2770, while perhaps adequate, is less than desirable. Within the urban-suburban portion of the Mid-America Health Systems Agency, ratios for combined primary care physicians-to-population show a ten-fold variation, ranging from 1:676-696 in Mid-Kansas City to 1:6370-7630 in inner Kansas City, Kansas."⁷
- HSA II At the Area II level, progress can be seen in increasing the availability of primary medical care services. However, at the individual county level, the problem of availability and accessibility of primary care services has worsened. More counties in '77 were above the population to primary care physician ratio of 2000:1 and more physicians are needed to bring all of the deficient counties up to the 2000:1 ratio...the areas with the largest shortages are in the following subareas: Lake of the Ozarks, Kaysinger Basin, Mo-Kan, Show-Me, Mark Twain, and Boonslick."⁸
- HSA III "Based on the analysis of primary care services in the Greater St. Louis Health Service Area contained in the Ambulatory Care Component of the Health Systems Plan, the following areas were recommended and subsequently designated as Primary Care Shortage Areas in the July 17, 1978 Federal Register: (Missouri only) Jefferson and St. Charles counties and North St. Louis and Southeast St. Louis City."⁹
- HSA IV "Area IV had a primary care FTE physician for every 1,966.39 people while in the State of Missouri as a whole was a physician for every 1,655 people. Among the subareas, the best ratio was in Ozark Gateway with a physician for every 1,735 people and the worst ratio in South Central Ozarks with 1:3,100."¹⁰
- HSA V "There are twelve counties in Area V designated as primary care physician shortage areas and 21 entire or parts of counties designated as Medical Underserved Areas."¹¹

There are a number of Federal Programs designed to assist areas in meeting their primary care/manpower needs. Their purpose is to provide the initial cost or "seed" money to initiate primary care projects. The programs and criteria for eligibility are listed below. Please note that the "Health Underserved Rural Areas" program is different in purpose from the others. It supports expansion of services in existing provider institutions to allow for unmet needs.¹² Also listed below is a brief description of the area requirements for designation as medically underserved and health manpower shortage areas.

<u>Federal Manpower Designations</u>	<u>Area Requirements To Be So Designated</u>
Medically Underserved Areas	Ratio of physicians to population Infant Mortality Percent Population 65+ Percent Population with Family income below Poverty Level
Health Manpower Shortage Areas	Medically Underserved Area ¹³
<u>Program</u>	<u>Criteria/Designation for Program Eligibility</u>
Community Health Centers	Medically underserved areas
Rural Health Initiatives and Health Underserved Rural Areas	Medically underserved areas Health manpower shortage areas High infant mortality rural areas
Integrated Urban Health	Medically underserved areas Health manpower shortage areas High infant mortality areas Population at least 10,000
National Health Services Corps	Health manpower shortage areas ¹⁴

In regard to the use of alternative types of health manpower, the Governor's Task Force on Rural Health found that the physicians who practice in rural areas have been cautious about utilizing physician extenders (nurse practitioners, physician assistants) in such a way as to increase their own productivity. At issue have been legal barriers, such as malpractice suits involving the use of these practitioners. Also, Missouri has not taken advantage of technology which could be utilized in conjunction with these lesser trained personnel to allow them to serve more effectively in rural communities.¹⁵

The distribution of health professionals is especially critical for primary care programs. A long-range solution must integrate economic incentives with the development of a health care system that links providers to appropriate practice programs. These programs may help to decrease professional isolation and help to increase the use of non-physician personnel. These non-physician personnel are available to

release the physician, as well as other 'non-physician' personnel, from repetitive tasks permitting them to have more time for other, more challenging problems thereby increasing productivity and job satisfaction.

Manpower shortages aggravate other problems of 'access' in primary care such as geographic accessibility and timely scheduling of appointments. The end result of all of these problems is an inadequate primary care delivery system in much of rural Missouri. The Governor's Task Force on Rural Health also reported that "a lesser number of health care programs were serving rural Missourians as compared with urban areas."¹⁶

Continuity

As discussed previously, a long-range solution must link providers to appropriate programs which decrease professional isolation and increase the use of non-physician personnel in order to heighten productivity. Taking this solution one step further involves bringing together a team and a "package" of primary care services. In doing so, better continuity of care could be achieved. The desired continuity of care is not present for most primary care patients. The Governor's Task Force on Rural Health reports, "a system for delivery of health care in a highly coordinated and integrated fashion was not prevalent in the state . . . prevention of ill health and proper use of health care services through some organized system appear to be lacking."¹⁷

Cost

By and large, private insurance policies have limited coverage for primary services. As addressed previously, Medicaid patients encounter problems of financial accessibility when health care providers do not participate in Medicaid. Medically indigent persons and/or the working poor who are not eligible for Medicaid also have problems of financial accessibility.

Use of alternative delivery settings for primary care in the hospital and the public health unit could conserve valuable health resources. At the minimum, it would have the clear advantage of setting up new services within existing, already familiar settings. While some primary care models already exist in these settings, more experimentation with comprehensive services is warranted.

The Division of Health and local county courts should be encouraged to determine the need for additional services at the local level. The Division of Health should be encouraged and supported in their efforts to seek major dollar appropriations for the expansion of manpower and services to these new population sub-groups. Service expansion to a larger 'user' population will require reallocation of existing funds as well as new appropriations. During the fiscal year 1980 appropriations process, the SHCC and the Division of Health should seek to inform members of the General Assembly as to the need and feasibility of primary care services in order to obtain funding in fiscal year 1981.

Accessibility*Acceptability*Problem DescriptionAvailability/Accessibility

According to the Governor's Task Force on Rural Health:

"The problem of attracting and retaining physicians for rural Missouri has been a chronic one for years . . . Studies indicate medical trade areas such as Anderson, Mountain Grove, Waynesville, Ironton, and Hayti/Carruthersville demonstrate the greatest need for physician manpower. Also, these physicians were found to be older and not being replaced as they retired, reduced their practices, transferred to other places, or died. Consequently, a continuous erosion of physicians is occurring with little or no substantial change in this trend. Adequate incentives and programs which would demonstrably alter this process have not been established in proportion to the severity of the problem."¹⁸

As previously addressed, the capability to establish primary care services in needy areas exists through Federal programs. An important issue is the continued maintenance of these services after the start-up funds run out or are withdrawn. This issue is not so much one of survival over the long run, as it is over the initial (3-5) years of operation. Marketing of the new services will be important. A plan or method for publicizing the program will be necessary as the ultimate test of the program is the extent to which patients use the services on a continuing basis. Key issues within the marketing approach include an understanding of the community's life style and cultural aspirations.

Continuity

Medicare will now reimburse for nurse practitioners who deliver care in a rural setting. Because we do not have a legal definition or sanction for the nurse practitioner as a mid-level practitioner, in Missouri, there are no provisions to meet federal guidelines for compensation, payable under the physician/nurse practitioner (team concept) primary care delivery system. This barrier not only adversely affects the promotion of the team concept, but also the use of the practitioners to increase the physicians' productivity.

The appropriate mix of manpower in the team approach for primary care services is a serious problem. In order for the consumer to be comfortable with a practitioner who has different skills than a physician, the physician must also be comfortable. A very important aspect

of this entire component is the determination of what types of support personnel will be accepted by the consumer and how these personnel fit into a primary care program.

The issue of intensity is also important here. Referrals should be kept at a minimum, and if the team approach to primary care is used, there should be considerable coordination. Monitoring should exist to insure that services are of the appropriate intensity and that services are not being overutilized. A single contact within the program should assume the role of monitor/advocate for the consumer throughout his/her stay in the program.

Cost

The financial aspects of any community-based human services program are delicate at best. Historically, such programs often have had to be curtailed in comprehensiveness because of inadequate funding. In addition, the traditional delivery modes have helped, at a system wide level, to drive up the cost of health care and, at a specific level, to allow for individual abuse and fraud. It is important to ensure that an appropriate mechanism for payment to and management of funds in a primary care program is developed. The use of an incentive system for cost consciousness should be considered. Such a system is the HMO concept where the physicians accept a pre-paid fee and for that fee provide all required health services. It is also important that the program accept Medicaid clients.

Goals, Objectives, and Actions

GOAL: TO INCREASE THE ACCESSIBILITY OF PRIMARY CARE SERVICES IN MISSOURI BY AUGMENTING THE EXISTING SYSTEM THROUGH THE USE OF ALTERNATIVE DELIVERY METHODS.

OBJECTIVE 1: By 1984, incentive and alternative education programs should be developed and initiated for the education and recruitment of manpower determined to be required to meet the primary care needs in Missouri.

Recommended Action 1: The expanded role of nursing practice as defined in the Missouri Nursing Practice Act should be clarified. This should include clarification of whether or not a nurse can work in solo practice and also what he/she can do in the absence of a physician.

Recommended Action 2: During 1980, each health systems agency should utilize local input to determine those geographic areas (by county or multiples of counties) which are most in need of primary care services.

Recommended Action 3: During 1980, local communities should be advised of their potential to qualify for a primary care program and the support for such a program should be evaluated.

OBJECTIVE 2: By 1981, the feasibility of altering the concept of the hospital as a setting primarily for acute care should be determined.

Recommended Action 1: By early 1980, the SHCC, working with the SHPDA and with the Missouri Hospital Association, should report on the potential of providing primary care services in a non-inpatient hospital setting.

Recommended Action 2: By 1980, the SHCC, in cooperation with the health systems agencies and the Missouri Hospital Association and its affiliates, should seek to implement experimental programs for the delivery of basic primary services in two hospitals (one urban and one rural) and the communities in their service areas. If indicated, by 1982, the program should be functional and by 1984, an evaluation made as to its feasibility and desirability for widespread use.

OBJECTIVE 3: By 1982, the feasibility of expanding the use of rural public health units in the delivery of primary care services should be determined, and, where possible, a program for implementation should be developed.

Recommended Action 1: Local public health units should seek to expand their efforts in the area of counseling, referral, wellness training, education, and administration.

OBJECTIVE 4: A study of alternative systems dealing with insurance, ownership, and various payment mechanisms should be completed and included in the overall model for primary care services.

Recommended Action 1: The Missouri Hospital Association and other professional health finance associations should be encouraged to be supportive of this study and should be involved in the development of all findings and recommendations.

ENDNOTES

¹David E. Rogers, "The Challenge of Primary Care," Daedalus, Journal of the American Academy of Arts and Science, 106:1 (Winter, 1977), p. 82.

²U.S. Department of Health, Education, and Welfare, "Building a Rural Health System," (Washington, D.C., 1976), p. 5.

³Health Systems Plans, (Buffalo: Health Systems Agency of Western New York, 1977), p. PC-8.

⁴Donald B. Ardell, High Level Wellness: An Alternative to Doctors, Drugs, and Diseases, (Emmaus, PA: Rodale Press, 1977).

⁵Special Report: Access to Health Care, (Princeton, N.J.: Robert Wood Johnson Foundation, 1978), p. 3.

⁶Governor's Task Force on Rural Health, Recommendations from the Governor's Task Force on Rural Health (Jefferson City, 1979), p. 2.

⁷Mid-America Health Systems Agency, Health Systems Plan 1979-1984, (Kansas City, 1979), p. 3.7-62.

⁸Area II Health Systems Agency, Proposed Revisions to the Area II Health Systems Agency's First Health Systems Plan: 1978-1982, (Moberly, Missouri, 1978), p. 75.

⁹Greater St. Louis Health Systems Agency, Health Systems Plan Supplements, (St. Louis, 1978), p. A-M-6.

¹⁰Area IV Health Systems Agency, Area IV Health Systems Plan: 1979-1984, (Springfield, 1979), p. 67.

¹¹Area V Health Systems Agency, Area V Health Systems Plan: 1978-1984, (Poplar Bluff, Missouri, 1979), p. PC-8.

¹²Area IV Health Systems Agency, op.cit., p. 74.

¹³Ibid., p. 74.

¹⁴Ibid., p. 74.

¹⁵Governor's Task Force on Rural Health, op.cit., p. 2.

¹⁶Ibid., p. 3.

¹⁷Ibid., p. 3.

¹⁸Ibid., p. 2.

VIII. DENTAL HEALTH SERVICES

To be addressed in future editions of the Missouri State Health Plan.

IX. MENTAL HEALTH SERVICES

Introduction

A practical method of defining health or illness in a particular society or culture would be to "define a range of normality for psychological or biological functioning," based on that group's sociological character.¹ To many, this would seem to be an easy task; to others with a broader view of health and illness, it would appear to be an impossible task. English and Pearson have defined the following parameters that can be readily adopted to any society in describing the ideal normative functioning of a mature adult.²

1. work usefully without undue fatigue or strain;
2. like and accept many lasting friendships and love and be affectionate with close friends;
3. conquer guilt, doubt, or indecision, and oppose impositions on himself/herself and his/her family;
4. treat all persons with appropriate respect;
5. give and receive love with joy;
6. advance his/her own welfare without exploitation of his/her fellow man/woman;
7. extend his/her interests and seek to contribute to the general welfare;
8. alternate work with play; and
9. be dependable, truthful, openminded, and imbued with a philosophy that includes a willingness to grow, improve, and achieve wisdom; and be interested in passing on his/her knowledge to the young.

Good mental health is not totally predicated on the possession of any of these attributes. However, the manner in which these attributes manifest themselves in an individual can determine how a society views 'mental health'. In the past, people were generally presumed to be mentally healthy if they were not affected with some outward sign of mental disorder or deficiency. Today, there is increasing recognition that problems associated with mental or emotional stress have many manifestations of varying severity and that "a balanced consideration of an individual's state of health demands attention to the whole (bio-psycho-social) person."³ The association of physical, mental, and emotional dysfunction with social problems - drug and alcohol addiction, child abuse, and delinquency, for instance, and the personal discomfort accompanying them - are now beginning to be understood and acted upon.

An individual's life experiences (environment) are believed to have a major part in bringing about manifested mental or emotional problems. However, these experiences are not satisfactory as a total explanation of

mental health because under similar circumstances of stress some people develop mental or emotional illness and others remain essentially healthy. Severe or prolonged stress in a person's environment is undoubtedly a highly contributory factor and both prevention and treatment of mental and emotional disorders involve easing unnecessary stresses as well as helping individuals to cope with those that cannot be avoided. Government focus in recent years has been lessening traditional environmental problems of pollution, energy, population control, etc. Unfortunately, for mental health ". . . consideration of how people cope with environmental stresses has been overshadowed by consideration of their effect on the environment."⁴

Mental health is a major concern in Missouri. Estimates have been made that one of every 7 persons in the United States develop some mental health problem or disorder serious enough to warrant professional intervention. There is no doubt, that, across the population, as measured by specific indicators (e.g., increase in the suicide rate of women, growing population 65 and over) there is a tremendous upsurge in mental illness of all forms.⁵

Under this umbrella of mental health, alcohol and drug abuse are seen as serious problems. Prevalence data published by the State Division of Alcoholism and Drug Abuse indicate that there may be as many as one million persons affected by alcoholism in the State of Missouri including family and associates and 50,000 to 60,000 substance abusers. Teenagers and women have been identified as having significant problems not previously defined. Many teenagers take a first drink or begin drug experimentation by age 14. For some, this will lead to excessive and frequent use or dependence/addiction in late adolescence. Reports indicate that male alcohol and drug abusers outnumber female abusers, but female abusers have frequently been underreported in statistical analysis. Cultural constraints have often restricted female substance abusers to their homes, thus leading to underreporting of the problem's severity. The improved status of women will likely lead to better reporting and a consequently higher reported prevalence of abuse. Generally across the total population, alcohol and drug abuse are on the rise.

Although the focus of this component is mental health, the thrust of this plan is to recognize the relationship of mental health to the other parts of the health care delivery system and to form linkages with the appropriate state agencies directly involved with mental health care. The social, medical, and economic aspects of most mental disorders are of such significance that they cannot be considered exclusive of other health problems.

"A system of mental health must never be thought of as an independent entity. It does not exist outside the framework and social fabric of the larger culture, but rather is a fixed and integral part of it. In particular, our system of mental health interacts with our system of religion and ethics, our economic system, and our political system."⁶

The mental health system should be considered within the framework of 'society' and its norms; and further, any development of a system should be accomplished so that it provides effective service to those in need of mental health care.

Neither prevention nor treatment of mental and emotional disorders can be effective without regard to these social, medical, and economic needs, and indeed most solutions to mental health problems will be found only through broad community action for development and improvement of our quality of life. A discussion of the major areas of intervention in mental health problems follows. While they are often treated as distinct areas, there is in fact a great deal of overlap.

Substance Abuse

In 1978, 11,151 Missourians were served for substance abuse problems and it is anticipated that there will be at least a 15 percent increase in the number served in 1979.**

The extent of the problem and its cost has continued to increase. In 1978, 320,000 individuals suffered from substance abuse and it is projected that over 340,000 will be victims in 1979 which represents a 6 percent increase. The cost of the problem to Missourians is staggering. In 1976, the costs were estimated at 1.3 to 1.7 billion dollars per year and it is projected that the costs in 1979 will approach 2 billion dollars.**

Substance abuse is a condition not easily defined. Generally, substance abuse can be viewed as a primary or secondary condition depending on specific conditions. It is recognized, however, that mental or emotional problems usually accompany substance abuse, and treatment directed at either alcohol or drug abuse must also attempt to reach these secondary conditions if a successful outcome is to be achieved.

The use of alcohol and/or drugs does not necessarily indicate abuse. In fact, substance 'abuse' has been viewed as being exclusive to a relatively small number of individuals. However, the severity of the present problem has signified a move toward a more rational and inclusive societal definition. For the purpose of this component, substance abuse will be defined as follows:

Substance abuse, being a physical or psychological dependence or impairment, is the chronic and habitual use of alcohol or drugs to the extent that the user endangers the health, safety, or welfare of him/herself and others.^{7, 8}

Opinions on the number of individuals affected by either alcohol or drug abuse vary. It is widely agreed, however, that the incidence is highest among individuals in urban areas and among those of the very lowest and the very highest socio-economic groupings. Individuals falling in-between these two extremes (e.g., median socio-economic status) exhibit a lower yet still significant incidence of substance abuse.⁹

Intentional or unintentional overmedication of the aged has been a concern in Missouri and the nation for some time.¹⁰ The fastest growing group of substance 'misusers' are persons 65 years of age and older. Nationally in 1976, nearly 6 million prescriptions for 'Valium' (a major tranquilizer) were written for persons 65 and over.¹¹ Most of these prescriptions were written by General Practitioners. The aged have often had tranquilizers prescribed for them on a 'use as needed' basis. In fact, many prescriptions are not related to a patient's medically

**From the Division of Alcoholism and Drug Abuse, Missouri Department of Mental Health.

defined condition. This is exemplified by the practice of overmedication of residents in nursing homes in order to keep them 'docile and quite.' A nursing home expert on the staff of the U.S. Senate Special Committee on Aging has summarized the problem in his estimation that "fifty percent of the nursing homes in the U.S. have a serious problem . . . with the amount of tranquilizers given to patients."¹²

The relationship of substance abuse to women is a relatively new and unexplored area, particularly in terms of substantive data and program activities. Until recently, the need for programs targeted toward the female population was not recognized. However, given the impetus of the 'womens' movement and the resulting changes in the perceived and actual role of women, substance abuse has become a major concern. Many issues common to both government agencies (e.g., Department of Mental Health) and volunteer groups (e.g., Columbia Missouri's Women's Place, National Organization of Women, 24-Hour Crisis Line) which affect women and their mental health have not been previously addressed in a formal manner.

Substance abuse is directly linked to many serious health problems ranging from direct injury (broken bones, frostbite, etc.) and infections to diseases that manifest themselves as structural body damage to the heart, liver, and brain. It becomes apparent that the total health of an individual is intrinsically linked to mental/emotional health.

Mental/Emotional Dysfunction

Mental illness or dysfunction is one of Missouri's heaviest medical, social, and economic burdens.¹³ In terms of human suffering, it is difficult to calculate the effect of this concern. The general dimensions of the problem can be interpreted from the estimates of those needing (but not receiving) treatment, from the number of those receiving treatment, and from trends for underserved populations normally characterized by high need.

There is no definitive way to estimate 'unmet' needs for mental health services, although work is progressing in that direction. Estimates indicate that about 25 percent of Missouri's population, approximately 1,250,000 persons are in need of mental health services (using a broad definition of mental disturbance).

Although 25 percent of Missouri's population may be in need of treatment, resources, motivation, and opportunity generally preclude that only about eight percent of those in need of treatment (two percent of the population) are receiving treatment. Through the Department of Mental Health, the community mental health centers serve approximately 3,311. Private providers serve some lesser number.¹⁴

From data estimates concerning treatment for schizophrenia, the state appears to be treating the major portion of schizophrenics.¹⁵ Persons suffering from depression, however, are estimated to be greatly underserved by the Department of Mental Health.¹⁶ Treatment for depression is also performed by professionals in private practice, and yet, even with the combined actions of the governmental and private sectors, it is estimated that less than one out of five persons who are clinically in need receive treatment.

Special attention is also being drawn toward serving other subgroups in our population. Cultural and social minorities have mental health problems magnified beyond the scope of their representation in the population (17 percent). Their income level, housing, education, and overall health status are substantially below that for the nation. These groups suffer from stresses of prejudice and racism and are over-represented by negative health status in certain parts of the mental health system. Evidence is mounting that mental health services are not adequately meeting their needs.¹⁷

Another problem is posed by the fact that more than 12 percent of the population in Missouri is age 65 and over and that proportion is increasing. Psycho-social problems, especially depression, rise with age. "Those over 65 occupy 29 percent of all public mental hospital beds, three times their proportionate share."¹⁸ Evidence, therefore, is mounting that the specific mental health needs of the aged have remained relatively unfulfilled.

Ideally, the objectives of the mental health system is to serve all those in need. As pointed out by the Committee on Comprehensive Health Planning of the American Psychiatric Association: "Implicit in the development of mental health programs has been the attempt to approach the individual as well as the development of health care services in a holistic manner -- which includes consideration of environmental factors. Thus, mental health programs have been . . . intertwined in the delivery of physical health services." It is further pointed out that, "mental health services interfacing with other human services such as education, correction, and social welfare provide vital opportunities for the early detection and intervention into situations which can lead to mental, physical, and emotional disturbances. These interfaces place the mental health systems in an advantageous position to deal knowledgeably with the planning of health services and programs which are community oriented, geared towards prevention and early intervention, emphasize ambulatory care and deinstitutionalization, and have the capacity to provide services to the chronically ill."

Mental Retardation/Developmental Disabilities

"In Missouri, the developmentally disabled are defined as those handicapped with mental retardation, cerebral palsy, epilepsy, autism, specific learning disabilities, or other neurological conditions found to be closely related to mental retardation or to require treatment similar to that required for mentally retarded individuals."¹⁹ According

to the Division of MR/DD, the developmentally disabled population totals approximately 288,380 persons, including 123,311 mentally retarded, 17,478 cerebral palsied, 48,548 epileptic, 1,941 autistic, and 97,102 with learning disabilities. Approximately 46 percent of the population is concentrated in urban areas with the rest being evenly distributed throughout the state.²⁰

Research in the past decade on the relationship between pregnancy and the ingestion of alcohol has arrived at significant results. Alcohol consumption by pregnant women is the most common preventable cause of mental retardation. Thus, health activities aimed at educating citizens to the dangers of drinking, especially during pregnancy, take on an added urgency. Alcohol consumption by pregnant women, therefore, cuts across the system boundaries of both substance abuse and mental retardation.

Desired System

Availability

Mental health services should be available to all people in need in Missouri through public and private services.

Accessibility

Mental health services should be accessible to all people in Missouri. Cost should not be a barrier to receiving care. Emphasis should be placed on preventive programs and early access to care before problems become severe. Services should be located within a reasonable distance of all residents of the state.

Acceptability

The President's Commission on Mental Health (1978) states that there are special mental health needs of many groups in the U.S.²¹ The diversity of needs presented by differences in sex, race, ethnicity, disability, and other factors must be "respected and responded to" in the designing of services. Linguistic and cultural barriers and special problems and life experiences require a variety of solutions.

Quality

An integrated system with an established set of policies should be capable of delivering a defined set of services which should include:

1. prevention (detection, education, research);

2. treatment (in all service settings);
3. support (outreach, restoration); and
4. life management (holistic and health maintenance).

The administration of these services should depend upon a system attitude of positive outcome rather than the traditional attitude of maintenance of the organizational structure. As these services are established, there begins a process of evaluation. An integrated system is structured to reflect carefully defined procedures for planning, programming, budgeting, and evaluation. If changes are to be directed toward the established policies, then the performance of the system in providing services must be monitored. Thus, evaluation of inputs and outputs become important. Data, such as program financial status, patient characteristics, types and amounts of services rendered, successful outcomes, etc., come into play. Clearly, more sophisticated techniques need to be established (e.g., Purchase of Services (POS) and Invitation for Bid (IFB) systems) to evaluate cost-effectiveness.

Specifically, the integrated system should include public facilities, such as state mental hospitals, mental health centers, etc., and quasi-public and private agencies that are also engaged in providing services for the mentally ill. Linkage of the total system with other health and human service systems must be maintained. Formal and informal relations with state, regional, and local entities would be highly encouraged. The desired outcome would be to ensure that representatives of the mental health system are actively involved in policy making and implementation.

Cost*

Continuity

Coordination of services is necessary to insure that a person reaches the next appropriate level of care within the system and that this care, particularly in community placement programs, is adequate. A well-developed social services program is essential for insuring that care is appropriate and adequate.

Comparative Analysis

Availability

Currently, the Department of Mental Health of the State of Missouri operates five state hospitals, three community mental health centers, four state school hospitals for the developmentally disabled, and eleven regional diagnostic centers for the developmentally disabled. During fiscal year 1976, more than 95,000 individuals were served by the

Department of Mental Health. In addition, a number of specialized programs, including community mental health programming, alcoholism and drug abuse treatment, rehabilitation, and developmental disabilities programming, are administered by the Department of Mental Health. The Division of Alcoholism and Drug Abuse currently contracts with some 55 community agencies which provide approximately 4.5 million dollars worth of services. The services provided range from primary prevention to treatment and rehabilitation.

The stated primary objectives of facilities and programs have been prevention, treatment, and rehabilitation. Partly because of this focus there has been increased community involvement with a corresponding lowering of inpatient populations in state facilities. The high cost of providing inpatient care has also been cited as a major factor behind the policy of reducing the inpatient population. Inpatient and outpatient admissions to state facilities have increased recently, normally indicating a significant problem; however, these statistics are misleading in light of the fact that the inpatient average length of stay has decreased markedly, having an overall effect of lowering the inpatient population.²²

While it is known that substance abuse is a serious problem among youth, there have been few real solutions offered to the problem of communicating the dangers of abuse and addiction.²³ Only recently, as part of the increasing awareness of a prepared school health curriculum, has substance abuse education been given serious consideration.²⁴ A new prevention program directed at youth was established this year by the Division of Alcoholism and Drug Abuse. As determined by the Division of Mental Retardation/Developmental Disabilities, there appear to be large service gaps throughout the state as indicated by the state plan for fiscal year 1979. At present, the Developmental Disability service system "consists of several federally assisted programs administered by state governmental agencies and a multitude of private, not-for-profit and/or public programs conducted at local levels throughout the state."²⁵ (For further discussion of service gaps see the section on Habilitation/Rehabilitation.)

The Departments of Mental Health, Social Services, and Elementary and Secondary Education are the primary state agencies offering services to the developmentally disabled. There is also a State Advisory Council on Mental Retardation/Developmental Disabilities acting as an advisory body to the Department of Mental Health. This State Advisory Council relies upon eleven regional developmental disability councils to advise and assist it in establishing priorities and conducting planning activities. Goals and objectives for the state MR/DD plan are established with input from the regional councils. The State Advisory Council also promotes interagency coordination by including representatives from public and voluntary agencies in its membership. It appears that there are areas of considerable overlap between the MR/DD system, other mental health services, and the health care delivery system.

Accessibility (See Quality)

Acceptability*

Quality

At the present time, the Department of Mental Health is in the process of implementing two management programs: the Purchase of Services (POS), and the Invitation for Bid (IFB), both of which are aimed at improving quality and accessibility as well as monitoring facilities, programs, services, and providers. Following the transition period and after these systems have been fully established, we should have a better understanding of how unit cost management affects the delivery of mental health services. These programs should also aid in future attempts to implement an integrated mental health system.

The Division of Alcoholism and Drug Abuse has instituted the Purchase of Service (POS) and Invitation for Bid (IFB) systems which are directly aimed at controlling costs and alleviating problems of inaccessibility and unavailability.²⁶ In fact, the POS system, which demands evaluation based on unit cost of support services, will directly encourage implementation of standard treatment programs, allow for more flexible local initiative, and make alcohol and drug abuse services more available and accessible. Needed empirical data will also be derived, giving full information on how a client moves through the ADA system. Currently, there is a shift from outdated programmatic efforts to modern unit cost evaluations. The POS and IFB systems in complementing each other, should provide the information needed in a rational planning effort. Regional ADA Councils and the HSAs will be supplementing this effort through need and resource assessments.

In Missouri, a 'wide-open approach' has been used in planning for alcohol and drug abuse prevention activities. This has appeared logical, given that in the past there were so few services that any additions were welcome. However, the point has now been reached where rational planning must be increased. Cooperation and formal agreements between the health systems agencies (HSAs) and the ADA regional advisory councils are now being established. By formalizing their relationship, the HSAs and the Regional Advisory Councils would improve their combined abilities to address the needs of underserved areas.

The Division of Comprehensive Psychiatric Services has instituted the Purchase of Services (POS) system with the intention of controlling costs and improving the availability and accessibility of services. The POS system should enable the program evaluation to be based on unit cost for direct treatment services thus encouraging implementation of standardized treatment programs, and providing for more flexible local initiative. Data derived from this system should give full information on how a client moves through the system thus providing a basis for future planning efforts.

Improvement of the present management system has now begun, as witnessed by the POS management tool. Continued evaluation of established programs, however, should not be overlooked.

Cost*

Continuity

The original intent of the community placement program in 1959 was to reduce overcrowdedness in state-run facilities. The present stated purpose of this program is "to provide mental health treatment and services in the least restrictive environment consistent with an individual client's needs."²⁷ Ideally, prior to leaving a Missouri Department of Mental Health (DMH) facility, potential placement cases are presented to a professional staffing team to evaluate the individuals and determine whether the individuals need further treatment, can return to their family, or if they can live in a less restrictive environment with support and treatment from the Department of Mental Health. If an individual is placed into the community, a treatment plan is prepared. This treatment plan defines the goals and objectives to be obtained during treatment and designates the staff of the Department responsible to ensure that the treatment plan is achieved. Each treatment plan is periodically reviewed and updated as needed. All persons in community placement have had a treatment plan completed on them even if they were in community placement before this requirement was instituted by the Department. The Community Placement Program of the Department is designed to provide assistance to a broad number of individuals with varying needs."²⁸ "The present statutory basis for the program is contained in Section 202.831, RSMo 1975 . . . This statute also requires the staff of the Department of Mental Health to continue its medical and social supervision even after the individual has left the Department of Mental Health Facility."²⁹ Because of this process, we have seen a distinct shift from the majority of patients being institutionalized in state facilities to placement in private and public facilities.³⁰ The DMH policy of continued monitoring of all placed individuals is considered a strong point of the program. However, utilization of inappropriate, poor quality facilities, has raised the question of whether or not effective evaluation and treatment of the placements is possible.³¹

Problem Description

1. Mobilizing resources for improving or expanding the delivery of mental health services to those who are currently not being served or served inadequately would appear to lie in the expansion of mental health services, such as Community Health Centers in Missouri. Some evidence of their positive impact on formerly underserved areas is now being observed.³² Expansion of these services should be oriented toward the particular needs and life style of the populations being served in a catchment area.

2. The solution to the problem of motivation for those suffering from psychological or emotional problems depends on public information and attitude change. The stigma associated with mental and emotional disorder remains high. Public perception of mental health is often distorted due to lack of knowledge about the system and what it is trying to do. Increased use of 'informal caregivers' such as ministers, physicians, teachers, lawyers, and others as mental health resources should encourage and strengthen the base of operation of the mental health system.
3. Through coordinated efforts, both governmental and volunteer groups would greatly improve the effectiveness of each other's individual efforts relative to women.
4. There is concern for the improvement of the present substance abuse treatment system through increased use of systems management. Present programs cannot be overlooked in the rush to bring a new system into existence. Therefore, a mechanism for continued evaluation of established programs should be implemented.
5. Basic to any substance abuse prevention program is a sound approach to public education concerning the dangers of the problem. Education must start early and continue throughout a student's learning experience. Educators must be prepared to be informative, understanding, and factual and must know where and who to contact in the proper handling of a drug abuse situation. Support must be given to programs incorporating substance abuse education as well as a health curriculum into our school systems.
6. The potential exists for more extensive treatment of the aged in present programs. In reality, however, it is unknown whether present substance abuse programs could be effective for Missouri's aged. Through evaluation of the present treatment orientation, the Division of ADA should be able to determine future direction whether it be programmatic expansion or establishment.
7. Historically, the aged have been one of the hardest groups to reach in an organized manner due to their sometimes isolated living situations in the inner cities and rural areas. As a result of this, television and radio would probably be the most appropriate educational media for reaching the aged. Efforts concentrated in this way could reach both private homes and nursing homes.

8. Before a treatment system can be established, the extent of the over medication problem of the aged must be documented. This documentation should, at a minimum, include demographic, morbidity, and mortality information along with type and number of prescriptions and who prescribed them.³³
9. As previously mentioned, the fetal-alcohol problem cuts across system boundaries. It is imperative that both the Division of Alcoholism and Drug Abuse and Mental Retardation/Developmental Disabilities work together in disseminating a common message about the fetal-alcohol relationship. Combining their expertise should enable the Department of Mental Health to directly address the needs of both the health educator and the potentially affected individuals. Other possible recipients would include health related governmental and non-governmental agencies. However, only through direct cooperative efforts with state government will the importance of this relationship be understood and disseminated.
10. Screening for potential fetal alcohol problems takes on tremendous importance as a follow up to lab evaluation. Only through a process of continued reevaluation and testing can a clinical screening process be implemented. Resolution of the fetal-alcohol problem has not reached this point. The relationship of alcohol and pregnancy needs to be better understood within the context of individual susceptibility.

Goals, Objectives, and Actions

GOAL: TO REDUCE THE PREVALENCE OF ALL FORMS OF MENTAL AND EMOTIONAL DISEASE THROUGH A PLANNED APPROACH OF PREVENTION, EDUCATION, AND TREATMENT AND THROUGH IMPROVED OPPORTUNITIES FOR ALL CITIZENS.

OBJECTIVE 1: By 1983, the Department of Mental Health should establish an integrated mental health system. This system should provide a minimum of the following:³⁴

1. services for individuals with mental or emotional illness;
2. services for the maintenance of well being encompassed within the concept of mental health;
3. research intended to discover the causes and effects of mental illness and to improve treatment and support programs (e.g., POS, IFB) and by applying findings to reduce their incidence; and

4. manpower and training programs.

This system must be directed toward achievable objectives, using both public and private agencies in an area where skills and expertise can be applied most effectively and economically. Each element, in turn, is carefully linked to all other elements of public and private human services systems.

Recommended Action 1: As a basis for establishing an integrated mental health system, the Department of Mental Health should develop and/or address the following policies:

- The broad objectives of the integrated mental health care system and the basis for identifying immediate priorities intended to achieve short-term goals.
- The scope of programs or services that may be provided by the system.
- The kinds of individuals or groups eligible for services and the basis upon which priorities may be established to guarantee that existing services are made available to those who need them most.
- Procedures and standards for all types of admission or commitment to treatment and guarantees that appropriate treatment will be made available to all who are admitted.
- The basic financial structure of the program and the system that will be applied in financing agencies, services, and supporting functions within the system.
- A formula or guideline for dividing the state into areas appropriate for planning and carrying out service programs, and for establishing local mechanisms that will manage mental health programs.
- Procedures for developing needed citizen participation at all levels of the system and for conducting and reporting the business of the system in a manner that encourages public understanding of its purposes and effectiveness.
- A definition of the rights of patients, clients, and others who are affected by mental health services as well as the identification of ombudsmen and advocacy functions designed to protect these rights.
- The chain of responsibility and authority by which participants in the system may be held accountable for their actions.

- Requirements for short and long-range planning, programming, budgeting, evaluation, personnel policies, and for reporting and maintaining data on program operations while protecting the rights of patients to confidentiality of information concerning their own cases.
- Efforts to cooperate with other human services agencies or programs at all levels, state or local.

OBJECTIVE 2: By 1980, the Department of Mental Health should establish the following general priorities for future integrated health systems planning:

1. promotion of community based mental health programs;
2. preventive mental health services;
3. services to special 'target' populations (e.g., women, youth, elderly, social minorities); and
4. deinstitutionalization with sensitivity (appropriate support systems must be established).

OBJECTIVE 3: By 1981, the Department of Mental Health should begin assessing and coordinating all mental health services in the State of Missouri.

OBJECTIVE 4: By 1980, the Division of Comprehensive Psychiatric Services should increase their treatment capability for high risk populations and populations in areas of unmet need by assuring availability and accessibility to referral and treatment services.

Recommended Action 1: The Division of Comprehensive Psychiatric Services should be supported in fulfilling the need for expansion of community mental health services into all areas of Missouri without such services.

Recommended Action 2: The Division of Comprehensive Psychiatric Services should be encouraged and supported in its educational activities and the SHCC should support inclusion of mental health education in the comprehensive school health curriculum.

OBJECTIVE 5: By 1980, the Department of Mental Health, in cooperation with other appropriate state agencies, should eliminate any inappropriate institutionalization and should ensure the availability of appropriate sites for its Community Placement Program.

Recommended Action 1: The Division of Comprehensive Psychiatric Services and MR/DD should upgrade the quality of community placement sites by eliminating all placements in facilities not meeting Division of Health approved standards in the categories of patient care, nutrition, sanitation, and life-fire safety codes.

OBJECTIVE 6: By 1980, the Division of Comprehensive Psychiatric Services should fully institute the Purchase of Services system in contracting for new prevention and treatment services and should establish a system to evaluate empirical data to be derived from the POS system. This data should be used in conjunction with regional psychiatric service councils to determine local needs and resources.

OBJECTIVE 7: By 1979, the Division of Comprehensive Psychiatric Services should ensure continued monitoring and evaluation of existing services under their purview.

OBJECTIVE 8: By 1980, the awareness of the role and scope of chemical substance abuse and the importance of personal decisions relating to that use in society should be increased among primary and secondary school age youth through integration of substance abuse education into the school health curriculum.

Recommended Action 1: In-service education should be established by the Division of Alcoholism and Drug Abuse in cooperation with the Departments of Education to help keep educators and administrators at all levels of the community education system fully informed of all aspects of substance abuse.

Recommended Action 2: Educators and administrators at all levels of the community education system should periodically meet with their local law enforcement authorities to gain an understanding of each other's responsibilities, problems, and limitations related to substance abuse and to promote mutual respect for cooperative activity.

OBJECTIVE 9: By 1980, the establishment of contacts to coordinate programmatic efforts between the Division of Alcoholism and Drug Abuse and volunteer groups which focus on substance abuse, should be facilitated in order to develop a strategy for decreasing substance abuse in women.

Recommended Action 1: The Division of Alcoholism and Drug Abuse should be encouraged to take the initiative in developing substance abuse programs with special emphasis on the needs of women.

Recommended Action 2: All volunteer groups concerned with the mental health needs of women should be encouraged to share information and coordinate strategies relating to substance abuse in order to increase direct involvement and benefit of substance abuse programs to women.

OBJECTIVE 10: By 1980, provider and consumer knowledge about the fetal-alcohol syndrome should be increased through coordinated efforts of the Division of Alcoholism and Drug Abuse (ADA) and the Division of Mental Retardation/Developmental Disabilities (MR/DD).

Recommended Action 1: By 1979, the Division of ADA and the Division of MR/DD should establish a common education strategy for dealing with the fetal-alcohol syndrome problem.

Recommended Action 2: Through cooperative efforts, the Division of ADA and the Division of MR/DD should develop and/or disseminate two sets of educational materials concerning the fetal-alcohol problem: one aimed at teachers (e.g., physicians, nurses, educators, etc.) and the other to be directly disseminated to consumers.

Recommended Action 3: The Division of Alcoholism and Drug Abuse should urge all state agencies, particularly the Division of Health through its district offices, and others working in the areas of maternal and child health to alert their clients to the dangers of alcohol consumption during pregnancy.

Recommended Action 4: Our knowledge of the fetal-alcohol problem and its effects on pregnant women should be increased as a basis for further evaluation.

OBJECTIVE 11: By 1981, the accessibility, quality, and number of treatment facilities and educational programs for the aged with substance abuse problems should be increased through the direct intervention of the Department of Mental Health.

Recommended Action 1: The Division of ADA should continue to provide leadership in documenting the extent of both intentional and unintentional overmedication of the aged in Missouri.

Recommended Action 2: Present substance abuse treatment programs should be reevaluated by the Division of ADA to determine their efficacy relative to the aged.

Recommended Action 3: The Division of ADA should expand their educational programs directed at the aged with substance misuse problems. This program should be aimed at the mass media, primarily television and radio.

OBJECTIVE 12: By 1980, the Division of Alcoholism and Drug Abuse and the state's health systems agencies should develop objectives aimed at increasing the availability and accessibility of substance abuse prevention and treatment services to underserved populations in Missouri.

Recommended Action 1: The Division of ADA should fully institute the Purchase of Service (POS) and Invitation for Bid (IFB) systems in contracting for ADA prevention and treatment services and should establish a system to evaluate empirical data to be derived from the POS and IFB systems. This data should be used in conjunction with Regional ADA Councils' input to determine local needs and resources.

Recommended Action 2: The Division of ADA should upgrade the quality of present substance abuse services through a process of continued monitoring and evaluation.

OBJECTIVE 13: By 1980, the Division of Mental Retardation/Developmental Disabilities should consider, at least the following four areas of concern in planning for MR/DD health services.

1. Public and private MR/DD resources at the community level should coordinate programs with appropriate segments of the health care system included in P.L. 93-641 (The National Health Planning and Resources Development Act of 1974).
2. Mental retardation could be prevented or seriously reduced in prevalence (e.g., fetal-alcohol syndrome) through preventive activities and a comprehensive health care delivery system.
3. The program placing MR/DD patients in community facilities (community placement program) should be monitored in order to upgrade the quality of the evaluation and treatment of placements.
4. Cooperation between regional MR/DD councils and health systems agencies and between the state MR/DD council and the SHCC is not mandated. However, cooperative efforts of these groups would aid the overall planning effort for mental health services and prevent potential overlap in many areas of service and in review and approval activities.

ENDNOTES

¹D. James Lieberman, Mental Health: The Public Health Challenge, (Washington, D.C.: American Public Health Association, April, 1975), p. 12.

²O. English and G. Pearson, Emotional Problems of Living, (New York: American Public Health Association, 1963).

³E. James Lieberman, op.cit., p. 15.

⁴Ibid., p. 36.

⁵Extension Division, University of Missouri, "Report on Selected Human Services, Needs, Cost, Forecasts for the State of Missouri, (July, 1976).

⁶E. James Lieberman, op.cit., p. 243.

⁷World Health Organization, Alcoholism as an Illness, (Geneva, 1973).

⁸Missouri Alcohol and Drug Abuse Control, Prevention and Rehabilitation Act, (Senate Bill #218).

⁹Extension Division, University of Missouri, op.cit.

¹⁰Robert N. Butler, Why Survive, Being Old in America, (New York: Harper and Row Publishers, 1975). For further discussion see the following: Zachary I. Hanan, "Geriatric Medications: How the Aged are Hurt by Drugs Meant to Help," January, 1978; Mary Adelaide Mendelson, Tender Loving Greed, (New York: Vintage Books, March, 1975).

¹¹Missouri Division of Alcoholism and Drug Abuse.

¹²Mary Adelaide Mendelson, op.cit., p. 18.

¹³Mental Illness as defined in Missouri Law is "... a state of impaired mental function and includes alcoholism and other drug abuse to such extent that a person so affected requires care and treatment for his own welfare, or the welfare of others, and without regard to whether or not such persons has been adjudicated legally competent ..."

¹⁴Missouri Division of Mental Health, Division of Comprehensive Psychiatric Services, State Plan for Comprehensive Mental Health Services, FY 1977-1978, p. 5-1.

¹⁵Ibid., p. 5-3.

¹⁶Ibid., Preface.

¹⁷Alcohol, Drug Abuse, and Mental Health Administration, "Forward Plan for Fiscal Year 1979-1983," (1977).

¹⁸Ibid., Summary.

¹⁹Department of Mental Health, Division of Mental Retardation/Developmental Disabilities, "State Plan for Fiscal Year 1978," p. 3.

²⁰"Mental retardation refers to subaverage general intellectual functioning which originates during the developmental period and is associated with impairment in adaptive behavior which may be reflected in maturation, learning, or social adjustment. 'Cerebral palsy' is a term used to designate a number of types of neuromuscular disabilities which are characterized by disturbances of voluntary or involuntary motor function, especially of the extremities, and are the result of damage to the brain. 'Epilepsy' is a symptom of disturbance in the electrochemical activity of the discharging cells of the brain; produced by a variety of neurological disorders. 'Autism' refers to severe disorders of communication and behavior which are manifested during the early stages of childhood. Autism includes, but is not limited to, infantile autism, profound aphasia, childhood psychosis, or any other condition characterized by severe deficits in language ability and behavior and by lack of ability to relate appropriately to others. 'Learning disabilities' are characterized by a disorder in one or more of the basic psychological processes involved in understanding or in using spoken or written language. These disabilities may be manifested in disorders of listening, thinking, talking, reading, writing, spelling, or arithmetic. These learning problems must be neurologically based and do not include problems due primarily to vision, hearing, motor handicaps, mental retardation, emotional disturbance, or environmental disadvantages."

²¹Report to the President from the Presidents Commission on Mental Health, Vol. I, 1978, pp. 4-7.

²²National Institute of Mental Health, "State Trends in Additions - State and County Mental Hospital Inpatient Services 1969-1973," (Statistical Note 119, 1975).

²³Extension Division, University of Missouri, op.cit.

²⁴Chapter 4: Health Education and Promotion in the 1978 State Health Plan.

²⁵Department of Mental Health, Division of Mental Retardation/Developmental Disabilities, op.cit., p. 4.

²⁶IFB - Invitation for Bid. Contracting mechanism used to obtain goals and services other than treatment. This is the same process used to buy all professional services in the State of Missouri. Examples of work performed under IFB are: prevention services, urinalysis services, hotel rooms and means for statewide meetings, etc.

POS - Purchase of Services. A contracting mechanism which purchases treatment services specified in the contract on a third party payment basis. The more treatment provided, the greater is the payment to the contractor, up to a ceiling amount. If no services are provided, no payment is made. POS is used for treatment which can be defined in a 'unit of service,' such as an hour of counseling or a day of residential care. Non-treatment services are purchased under the IFB system.

²⁷Report to the Mental Health Commission on Community Placement, (1977).

²⁸Ibid.

²⁹Ibid.

³⁰Ibid.

³¹Department of Social Services, "A Special Governor's Report, The Nursing Home Industry in Missouri: Its Quality and Adequacy to Meet the Needs of Missourians," (1978).

³²E. James Lieberman, op.cit., p. 113.

³³Robert N. Butler, op.cit.

³⁴National Association for Mental Health, "For the People," (Arlington, Virginia, 1974).

X. GENERAL MEDICAL SERVICES

Introduction

This component of the Diagnostic and Treatment Section of the State Health Plan will address three separate services: End-Stage Renal Disease Services, Pediatric Inpatient Services, and Acute Inpatient Care Services.

For end-stage renal disease services and pediatric inpatient services, only their relationship to the National Health Planning Guidelines will be discussed here.

Acute inpatient care services will be examined in depth and will include an analysis of the present system characteristics, a methodology for projecting acute care bed need, and a determination for consistency with the National Health Planning Guidelines.

1. End-Stage Renal Disease

National Health Planning Guidelines

Congress created the End Stage Renal Disease (ESRD) Program under P.L. 92-603, the Social Security Amendments of 1972. Section 2991 provides for payment and treatment for End Stage Renal Disease (ESRD) under Medicare, regardless of age.

Basically, there are 2 kinds of ESRD life-sustaining services: hemodialysis, in which the patient's blood is run through a machine which acts as an artificial kidney; and transplantation, in which the patient's nonfunctioning kidney is replaced surgically with a functioning kidney. Each of these treatments requires auxiliary services which may have to be approved separately or included in the treatment plan for a patient. Hemodialysis may be either "self-care dialysis" or "chronic maintenance dialysis." Self-care dialysis can be carried out by the patient with limited help either at home or in a dialysis facility. Chronic maintenance dialysis is carried out in a facility, with the patient essentially passive. A special case of dialysis is "peritoneal dialysis, in which the patient's own abdominal membrane is part of the "equipment." ESRD service can be provided in an inpatient setting, outpatient units, freestanding unit, or home setting. Under the ESRD Program regulations, there are three types of ESRD facilities.¹ These are:

Renal Transplantation Center: A hospital unit approved to directly furnish transplantation and other medical and surgical specialty services required for the care of the ESRD transplant patient.

Renal Dialysis Center: A hospital unit approved to furnish the full spectrum of diagnostic, therapeutic, and rehabilitative services, except renal transplantation required for the care of ESRD dialysis patients.

Renal Dialysis Facility: A unit approved to furnish dialysis services to ESRD patients.

The ESRD Program provides a life-sustaining service for its growing number of beneficiaries. At the start of the program, some 10,000 patients were receiving maintenance treatment; this number had grown to 28,000 by the end of 1976. The Social Security Administration expects the number of Medicare beneficiaries of dialysis and transplant services to grow to over 5,000 in the next 5 years. However, a significant aspect of the program is its cost. Currently, annual cost is roughly \$600 million and is expected to double by 1981.²

National Standards

- a. The Health Systems Plans established by HSAs should be consistent with standards and procedures contained in the DHEW regulations governing conditions for coverage of suppliers of end-stage renal disease services.

These regulations include:

- The Secretary designated ESRD network areas, each serving a minimum population base of 3.5 million and each including at least two renal transplant centers. The secretary may designate areas of less than 3.5 million population or a single renal transplant center when necessary for the achievement of the ESRD program objectives.
- ESRD minimal utilization rates for renal transplantation centers are 15 or more transplantations/year for unconditional approval and 7-14 transplants/year for conditional approval.
- ESRD minimal utilization rates for dialysis facilities performing greater than 20 percent of their dialysis on outpatients in an SMSA of 500,000 population or greater are:

Unconditional approval: 6 or more dialysis stations with an average of 4.5 or more dialyses per station per week.

Conditional approval: 6 or more dialysis stations with an average of between 4.0 and 4.5 dialyses per station per week; or 4 or 5 dialysis stations with an average of 4.5 or more dialyses per station per week.

- ESRD minimal utilization rates for dialysis facilities performing greater than 20 percent of the dialyses on out patients in an SMSA of less than 500,000 or in an area not included in an SMSA are:

Unconditional approval: 3 or more dialysis stations with performance of an average of 4.0 or more dialyses per station per week.

Conditional approval: 2 dialysis stations with performance of an average of 4.0 or more dialyses per station per week.

- ESRD minimal utilization rates for renal dialysis centers performing 20 percent or less of their dialyses on outpatients are:

Unconditional approval: 3 or more dialysis stations with performance of an average of 4.0 or more dialyses per station per week.

Conditional approval: 2 dialysis stations with performance of an average of 4.0 or more dialyses per station per week.

Discussion

Desired end-stage renal disease (ESRD) service utilization levels, unlike other standards addressed in the "National Health Planning Guidelines", must be consistent with standards and procedures contained in previously published DHEW regulations. These regulations incorporate standards which relate to the supply, distribution, and organization of ESRD facilities and are to be utilized by the health systems agencies and state health planning agencies in establishing their respective plans.³

These regulations do not try to encourage any particular type of dialysis. "However, it has been widely recognized that self-care dialysis can significantly contain costs without impairing the quality of care for the suitably chosen patient. The organization of resources to support self-care dialysis is, therefore, encouraged to the maximum extent practicable."⁴

Current System**

"Because of the national attention given to the high cost of treatment of end stage renal disease, planning for ESRD services has become increasingly important. Local and state planning for ESRD services in Missouri, under the 5 state Health Systems Agencies (HSAs) and the Missouri State Health Planning and Development Agency (SHPDA), and regional planning under federal End Stage Renal Disease Network #9 and #18, has increased the demand for accurate information on the epidemiology of ESRD patients. The Missouri Kidney Program, in response to this need, expanded its patient data management system in FY 77/78 to include all Missourians on dialysis and transplant. Information from this system has been used by hospitals and free-standing dialysis units in anticipation of opening new units or expanding existing services.

**Excerpted from the Missouri Kidney Program Annual Report.

The same data is made available to state and federal health agencies and planners charged with evaluating requests for new or expanded services. The data system also helps the Missouri Kidney Program keep pace with the growing needs of kidney patients in Missouri."⁵

A total of 835 Missourians with end stage renal disease (17.4 per 100,000 population) were on dialysis in FY 1977/78 (see General Medical Services Section in the Appendix). Five hundred and twenty-eight of these patients (10.9 per 100,000 population) were on dialysis at the start of the year (July 1), and 627 (13.0 per 100,000 population) were on dialysis at the end of the year, a growth of 18 percent. Almost every county in Missouri had at least one resident on dialysis in 1977/78. Compared to Missouri's total population, the ESRD dialysis population is: 1) predominantly male (57 percent); 2) has a higher percentage of nonwhites (33 percent); and 3) is older (average age is 49 years).

The average age of the new dialysis patient in FY 1977/78 was 49 years with an age range of 10-86 years. It is important to note that the average age of dialysis patients has steadily increased since the early days of ESRD therapy. Last fiscal year, the program reported an average age of 45 years. Two explanations are generally given for the increase in patient age: 1) as more patients survive dialysis, the total patient population gets older; 2) older patients (some in their 70's) are being accepted into dialysis programs, even if they have other medical complications. A total of 260 persons began dialysis for the first time in FY 1977/78. This represents an annual incidence rate of 5.4 per 100,000 population. The national incidence rate for new cases of ESRD patients eligible for dialysis is generally quoted at 5 per 100,000.

At the beginning of FY 1977/78, 162 maintenance hemodialysis stations were federally approved for use in Missouri; at the end of the year this number increased to 168 in 17 dialysis centers and facilities. (This figure does not include home training stations, HAA positive stations or back up machines.) (See General Medical Services Section in the appendix for the distribution of dialysis facilities, centers, and stations in Missouri as of June 30, 1978.)

Stations in Kansas City, Joplin, and St. Louis also serve non-Missouri residents. Although the number of treatments these patients received during FY 1977/78 is unavailable, even without consideration of these treatments, the approved stations were utilized at an overall rate of approximately 60 percent. ESRD Network #9, in its planning process, has approximated the network utilization rate at between 60 and 70 percent. (The network includes all of Kansas and all of Missouri except the Bootheel and 4 Illinois counties surrounding the St. Louis area.)

A broad selection of treatment modalities was available in FY 77/78 to ESRD patients in Missouri, ranging from standard outpatient maintenance dialysis to self-care in a home setting. Table 3.5-7 represents the total number of treatments received by Missouri patients by treatment type.

TABLE 3.5-7
TREATMENT DISTRIBUTION
FY 77/78

Treatment Modality	Number of Treatments	Percentage of Total
In Patient Hemodialysis	4,843	6%
Outpatient Hemodialysis	58,129	74%
Self-Care (Home)	12,634	16%
Self-Care Training	1,820	2%
Limited Care*	1,404	2%
Limited Care Training	56	0%
TOTAL	78,886	100%
*Limited care and limited care training were reported as out-patient treatments from 7/77 to 1/78. The figures for limited care and limited care training reported here are, therefore, understated.		

Several figures from this table are significant. Approximately 16 percent of all hemodialysis treatments in FY 77/78 were received in home settings. The actual number of persons who received home treatments totaled 140, or 16 percent of the total number of patients during the year. The national average, according to the latest federal Medical Information System, was 13 percent as of 12/31/76. Sixteen Chronic Ambulatory Peritoneal Dialysis (CAPD) patients and 5 of the reported chronic intermittent peritoneal patients were also treated in home settings, bringing the total number of home dialysis patients to 161 or 19 percent of the state's total.

A great deal of attention is being paid to the home dialysis population. In Missouri, the home care population has a broad age range, 10 to 77 years in FY 1977/78. (St. Louis Children's Hospital began to home train for the first time in FY 1977/78.) The average age of home patients was 48 years, just one year below the average for all patients. Non-white patients represent 33 percent portion of the total dialysis population, but only 18 percent of the home dialysis population. Only one non-white female was on home dialysis in FY 1977/78.

Approximately the same percentage of home dialysis patients were transplanted (12 percent) as the total dialysis population (11 percent). Fifteen persons died while home dialysis patients; this percentage (9 percent) is below the 13 percent expiration rate for all dialysis patients.

Until FY 1977/78, hemodialysis was nearly the only option for a patient who wished to dialyze at home. During FY 1977/78, use of home chronic intermittent peritoneal and continuous ambulatory peritoneal dialysis increased (see introduction). Table 3.5-8 indicates the number of persons trained for home care during FY 77/78.

TABLE 3.5-8
NUMBER OF PATIENTS TRAINED FOR HOME CARE
DURING FY 77/78

Treatment Modality	Patients	Percent of Total Home Patients
Chronic Intermittent Peritoneal Dialysis	6	6%
Continuous Ambulatory Peritoneal Dialysis	12	11%
Home Hemodialysis	<u>89</u>	<u>83%</u>
	107	100%

Source: Missouri Kidney Program Annual Report 77/78, Prepared 8/21/78.

Although the number of persons trained for home dialysis seems to be declining in Missouri, increases in the number of patients trained for CAPD and chronic intermittent peritoneal dialysis treatment may keep Missouri's home dialysis population above the national average.

Cost of ESRD Care

For FY 1977/78, the 14 participating facilities reported that hospital charges against patients totaled nearly \$13 million in FY 1977/78. These charges were reimbursed from Medicare, Medicaid, private insurers, and the Missouri Kidney Program. Over \$1 million remained unpaid.

In FY 1977/78, participating facilities reported that their average cost for a maintenance hemodialysis treatment was \$147. The average charge for the same treatment was \$182. Inpatient and home training costs and charges were somewhat higher, averaging \$158 cost (\$189 charge) for inpatient treatments and \$155 cost (\$204 charge) for a home training treatment. Costs per treatment continue to rise in smaller facilities, while some of the larger urban units report their costs are declining slightly. Although no average annual costs per patient are available, it can be assumed that a patient who is on maintenance hemodialysis for 12 months, represents a minimum cost of \$23,400 (156 treatments per year X \$150 Medicare screens for a maintenance dialysis treatment.)

Home costs are difficult to identify. Few facilities in Missouri maintain separate cost centers for home care. Under P.L. 95-292, passed June 13, 1978, Medicare coverage for home treatment has increased. Many facilities will be required to identify home costs to take advantage of increased benefits for their patients.

Conclusion

Although it is impossible to anticipate the exact number of dialysis patients in the future, predictions have been made. In cooperation with the Health Services Research Center/Health Care Technology Center (HSRC/HCTC), the Missouri Kidney Program has projected that participating facilities can anticipate a probable growth in the dialysis census of 16 percent between July 1, 1978 and June 30, 1979, with a beginning census of 633 patients. It should be noted that this projection is part of a preliminary study and further refinement of patient projection techniques is being pursued by the Missouri Kidney Program and cooperating agencies.

Based on the increased projections of need, dialysis units in Missouri in FY 1978/79 will probably not only expand existing services, but add new treatment modalities. Patients will have an increasingly wider array of therapies to choose from. Continuous ambulatory peritoneal dialysis and chronic intermittent peritoneal dialysis in home settings are two modalities that are gaining in popularity. Although only one Missouri facility has officially established a separate treatment category for limited care services, some units are planning to add in-center self-care to the treatment choices already available to their patients.

Local, state, and regional health services planners, in addition to the Missouri Kidney Program, are concerned with the problem of projecting the future size of Missouri's ESRD population. No clear cut pattern of growth emerges from historical data. Between 1965 and 1970, the dialysis population in participating facilities increased by over 100 percent each year. However, by FY 1975/76, the increase was only 34 percent, and between July 1, 1977 and June 30, 1978, the increase was 18 percent, the same as the previous year. Whether or not the increase in dialysis population will continue at this level or whether or not the need projections will remain valid is not certain.

Given the uncertainties in projecting need, it is highly important that health planning agencies work together with the ESRD Network #9 and the Missouri Kidney Program in undertaking planning and review activities within their areas and among areas to permit rational decision making by those providing and accepting ESRD services. As stated in Social Security guidelines, "The development of an effective, cost efficient health care delivery system for ESRD patients requires that there be continuing cooperation between the HSAs, SHCCs, and SHPDAs within the ESRD network area. As health planning agencies and ESRD networks assess the need for renal services and develop their plans, a close cooperative effort will maximize the potential for congruent plans."

Goals, Objectives, and Actions

The indicator levels, as established under P.L. 92-603, Section 2991 and restated in the National Health Planning Guidelines, should provide sufficient flexibility to allow for additional dialysis facilities and/or stations and support services whether for inpatient, outpatient, or home dialysis while containing costs and maintaining high levels of care.

GOAL: BY 1983, ALL HEALTH SYSTEMS PLANS SHOULD BE CONSISTENT WITH THE STANDARDS AND PROCEDURES CONTAINED IN DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE REGULATIONS GOVERNING SUPPLIERS OF END-STAGE RENAL DISEASE.

For the present edition of the Missouri State Health Plan, the adoption of the National Guideline standards for end-stage renal disease as minimum is recommended.

Health Systems Agencies desiring to justify an exception or make an adjustment to these standards, for their health service area, must document such exceptions and/or adjustments. This analysis must be quantitative and consistent with the agreed upon approach. (See Guidance Document for Development of Health Systems Plans, Revised.)

2. Pediatric Inpatient Services

National Health Planning Guidelines

Introduction

Pediatric inpatient care as utilized in this component is defined as that care delivered in "a pediatric inpatient unit in a specific section, ward, wing, hospital, or unit devoted primarily to the care of medical and surgical patients less than 18 years, not including special care for infants."⁶

As described in the Greater St. Louis Health Systems Plan, "the basic tenet to be applied to an analysis of inpatient pediatric services . . . is the prerequisite understanding that such care should be delivered within the context of a regionalized model. This approach recognizes the unique needs of the population, the resources currently available to address those needs, and the optimal system of delivery required to dispense medical care in a quantitative, cost effective manner." The rationale for regionalization of pediatric inpatient care is extensive. See appendix under Section 3.5 Pediatric Inpatient Services for an outline of the tenfold rationale.

As implemented, regionalization is nothing more complicated than the creation and rational distribution of health care resources and programs justified by demographic and community needs. Health services should be planned at a variety of levels including primary care, secondary consultation with more varied services, and sophisticated tertiary care required for special problems.

Basically, an effective regionalized system of pediatric care should provide for:⁸

1. The meeting of children's needs in a manner and at a place appropriate for their state of health or disease. This would include orderly progression of interrelated facilities and services, with comprehensive coverage, linkage, and consolidation of needed services without unnecessary duplication.
2. Adequate attention to all levels of care from primary through rehabilitative services.
3. Correlation of the sites of health service delivery, at various levels, with the distribution and special needs of the population. Location of appropriately skilled providers is basic and incentives may need to be provided for relocation to meet patient needs more adequately.

4. High quality care at all levels which should be consistently applied among all population groups.
5. Organization of separate inpatient services for children that do not preclude the sharing of costly common adult services.

A recent report of the Committee on Implications of Declining Pediatric Hospitalization Rates of the National Research Council stated that "In developing regional plans for hospitalization, health planning agencies in each state should consider the special problems of children -- the tendency to acute, short-term disease requiring urgent but brief hospitalization, the seasonal variation in childhood diseases, the proneness to epidemic variation, and the fact that the proximity of a parent may be a major influence in improvement and care -- in addition to the more obvious factors such as criteria for differing levels of care (primary, secondary, and tertiary), consultation services, continuing education programs, and referral networks."

The Committee also stated that they felt that children "are better cared for in hospitals when they are housed according to their needs and not mixed with adults."⁹

However, "For a policy of housing children separately to be effective, certain minimum services and facilities are needed, thus requiring bed capacity and utilization to make the provision for these services and facilities economically feasible. This would mean that in certain areas beds for children should be consolidated in fewer hospitals, a process aided by cooperative interhospital programming and the development of a regional plan. A necessary corollary of consolidating pediatric hospital beds is concern with problems of access and utilization of primary health services, outpatient care, emergency care, transportation, and referral systems. Geographic locales likely to be associated with decreased accessibility to high quality care, such as sparsely settled rural areas or crowded urban ghetto areas, also need special attention."¹⁰ It is hoped that the Guideline standards will provide the benchmark and impetus for the system outlined by the Committee.

National Standards

- a. There should be a minimum of 20 beds in a pediatric unit in urbanized areas.** An adjustment downward may be justified when travel time to an alternate

**"Urbanized area" is an area within an SMSA consisting of a central city of 50,000 or more plus the surrounding, closely settled urban fringe (U.S. Census definition).

unit exceeds 30 minutes for 10 percent or more of the population based on analysis by the HSA.

- b. Pediatric units should maintain average annual occupancy rates related to the number of pediatric beds (exclusive of neonatal special care units) in the facility. For a facility with 20-39 pediatric beds, the average annual occupancy rate should be at least 65 percent; for a facility with 40-79 pediatric beds, the rate should be at least 70 percent; for facilities with 80 or more pediatric beds, the rate should be at least 75 percent.

Discussion

"Pediatric services should be planned on a regionalized basis with linkages among hospitals and other health agencies to provide comprehensive care."¹¹ Regionalization has been found to be the best approach to solving many of the problems of hospitalizing children "under the best conditions possible and at the lowest cost compatible with those conditions."¹² The minimum bed standard was developed by DHEW in the context of the Committee findings and this idea.

The American Academy of Pediatrics has recommended the criteria of 30 minutes travel time to ensure that children can remain close to their homes, family, and friends. Frequent visits have been found to be highly desirable as an aid to improvement and recovery of a child. The Academy has also supported variable occupancy rates in order to "reflect the need for smaller units to maintain the capacity to accommodate normal day-to-day fluctuations in admissions and to set aside pediatric beds for particular ages and types of cases."¹³ However, the Academy also stated that the standards are not intended to encourage unnecessary admissions or stays to achieve the desired levels.

Current System

Many factors come into play in analyzing the hospitalization of children. The National Guideline standards attempt to focus on a few indicators of hospital and service efficiency. However, in "light of changing population distributions, falling birth rates, and escalating health costs"¹⁴ these indicators are only quantitative factors for system evaluation. The data necessary for quantitative evaluation are not easily obtained. Age definitions for pediatric beds and pediatric patients vary among hospitals and planning agencies, as does the practice of whether to count the child admitted to a surgical service in a general hospital as a pediatric or surgical patient. Some hospitals lacking distinct pediatric units admit children to available rooms but do not have a specific number of beds for children. Thus the capacity for identifying children may vary with the daily census. It is not always easy to define the population from which pediatric patients are drawn because age distribution of the population differs in varied areas.

Given the variation in terminology, the value of data collected under the present system would be questionable at best. Nevertheless, efforts must be made to develop common approaches.

Table 3.5-9 indicates that 74 hospitals offered pediatric inpatient services in Missouri in 1977. Table 3.5-9 also indicates that only one health service area of the five maintained an average annual occupancy of at least 65 percent. Patient origin information will be needed to determine if some of those units are justified based on the 30 minute travel time criteria.

TABLE 3.5-9
HOSPITALS OFFERING PEDIATRIC INPATIENT SERVICES

HSA	NUMBER OF FACILITIES	NUMBER OF BEDS	PERCENT OCCUPANCY (OVERALL)
HSA I	12	393	59.8
HSA II	26	192	47.2
HSA III	17	744	65.5
HSA IV	9	119	56.1
HSA V	10	122	45.6
STATE	74	1570	59.6

Source: Missouri Division of Health, Hospital Profiles, 1977.

Conclusion

A balanced approach to regionalization is essential. The limited resources for health services tend to flow toward the elaboration of technology at tertiary centers, yet our nation's greatest deficiency in health services continues to be the failure to extend simple technology of established value to make primary care available to everyone.

To accomplish the goals of a regional system requires accurate population based data, and data on health needs of all children and on existing resources for children within the state. Efforts to collect data regarding children must be expanded and intensified.

Goals, Objectives, and Actions

The indicator levels as established by the National Health Planning Guidelines should provide sufficient flexibility to allow for additional pediatric inpatient facilities while containing costs and maintaining a high level of care.

GOAL: BY 1980, THE HEALTH SYSTEMS AGENCIES IN MISSOURI SHOULD IDENTIFY ALL PEDIATRIC FACILITIES IN THEIR HEALTH SERVICE AREAS, AS DEFINED IN THE "NATIONAL HEALTH PLANNING GUIDELINES."

GOAL: BY 1983, ALL PEDIATRIC UNITS IN URBAN HOSPITALS SHOULD CONSOLIDATE OR SHARE SERVICES IN ORDER TO MAINTAIN A DESIRED MINIMUM OF 20 BEDS PER UNIT.

GOAL: BY 1983, ALL HOSPITAL BASED PEDIATRIC UNITS SHOULD ENSURE THAT THEY ARE OPERATING AT A 65 PERCENT TO 75 PERCENT ANNUAL OCCUPANCY DEPENDING ON SIZE (20-39 BEDS, 65 PERCENT; 40-79 BEDS 70 PERCENT; AND 80+ BEDS, 75 PERCENT).

For the present edition of the Missouri State Health Plan, the adoption of the National Guideline standards for pediatric inpatient services is recommended.

Health Systems Agencies desiring to justify an exception or make an adjustment to these standards, for their health service area, must document such exceptions and/or adjustments. This analysis must be quantitative and consistent with the agreed upon approach. (See Guidance Document for Development of Health Systems Plans, Revised.)

ENDNOTES

¹Bureau of Quality Assurance, HEW, End Stage Renal Disease Program Guidelines.

²DHEW, Guidelines: Roles in the Medicare ESRD Program, March, 1977, p. 2.

³Ibid.

⁴Ibid.

⁵Annual Report, Missouri Kidney Program.

⁶Committee on the Implications of Declining Pediatric Hospital Rates of the National Research Council, Implications of Pediatric Hospital Rates, March, 1977.

⁷Ibid.

⁸Committee on the Implications of Declining Pediatric Hospital Rates of the National Research Council, op.cit.

⁹Committee on the Implications of Declining Pediatric Hospital Rates of the National Research Council, op.cit.

¹⁰Committee on the Implications of Declining Pediatric Hospital Rates of the National Research Council, op.cit.

¹¹National Health Planning Guidelines.

¹²Committee on the Implications of Declining Pediatric Hospital Rates of the National Research Council, op.cit.

¹³National Health Planning Guidelines.

¹⁴Committee on the Implications of Declining Pediatric Hospital Rates of the National Research Council, op.cit.

3. Acute Inpatient Care

Introduction

Acute inpatient care refers to the system that provides services to individuals requiring urgent medical attention as a result of an emergency, an increased level of illness, pregnancy, or elective institutionalization. These services are normally provided on a 24 hour basis in licensed and approved facilities under the supervision of a physician. Services rendered normally include:

1. anesthesiology
2. blood bank
3. cardiac intensive care
4. electrocardiography
5. emergency services
6. general intensive care
7. general medical-surgical
8. internal medicine
9. obstetrics and gynecology
10. pathology lab services
11. pediatrics
12. pharmacy
13. psychiatrics
14. diagnostic radiology

Other services provided either through the hospital facility or through arrangements with other organizations include:

1. physical therapy
2. pulmonary function
3. occupational therapy
4. social services
5. hearing and speech

Scientific and technological advancements have contributed heavily to the diagnosis, treatment, and prevention of disease. Sophisticated services and manpower resources centralized in the hospital have made the hospital the major focal point of the health care system. Medicine has been transformed into a major industry in the United States and as such, the hospitals have become the major institutional form of this industry.

This component of the plan evaluates the statewide acute care system in terms of availability, accessibility, cost, quality, acceptability, and continuity and addresses the National Health Planning Guidelines for general hospital beds.

DEFINITIONS OF TERMS USED

Bed Supply -

- a. licensed - The number of beds in current operation as designated by the hospital in the renewal application and in conformance with both the applicable physical environment and staffing licensing requirements* as determined by the Missouri Division of Health.
- b. designed - Designed capacity is the survey capacity or bed count in any patient room where adequate square footage is provided. Adequate square footage is defined as:
 - 100 square feet in single rooms.
 - 80 square feet per bed or pediatric crib in multi-bed rooms;
 - 40 square feet per bassinet in pediatric nurseries.

Beds/1000 Population - Ratio of number of hospital beds (licensed or surveyed) to the appropriate service population in thousands.

Percent Occupancy - Ratio of average daily census to the average number of beds (that is, licensed beds) maintained during the reporting period.

Patient Days - Number of adult and pediatric days of care rendered during the entire reporting period; excludes newborn days of care.

Use Rate - Ratio of inpatient days to the appropriate service population in thousands.

Admissions/Discharges - Number of patients accepted for inpatient service during the reporting period; excludes newborns.

Average Length of Stay (ALS) (also average stay) - Average stay of inpatients during the reporting period. Derived by dividing the number of inpatient days by the number of discharges.

Average Daily Census - Average number of inpatients receiving care each day during the reporting period; excludes newborns.

*"Applicable state licensing facility environment requirements" recognizes the existence of dual standards for Missouri hospitals. Those facilities (or portions thereof) in operation prior to enactment of the Missouri Hospital Licensing Law are exempt from complying with the requirements for new hospitals by virtue of the Grandfather Clause.

Desired System

Availability

Availability refers to the "appropriate supply and mix of health services and the capacity of resources for providing care."¹ The "supply and mix of health services" needed by the residents of the State of Missouri depends on a variety of factors; age composition of the population to be served, the awareness by the public of the needs and wants for health care, and the financial resources available to the system for health services. These major forces interact to mold the demand and supply.

It is generally accepted that not all hospitals can or should provide all the services that exist. Acute care services should be based not only on the identification of available and needed services but on the appropriate relationships of such services to acute care service areas. Precise service areas developed under a "common framework" have not been developed, as yet, in Missouri. The Missouri SHPDA, in cooperation with the five Missouri Health Systems Agencies, will attempt in the coming year to establish an explicit framework for identifying hospital service areas and to develop a process for integrating the individual bed need and utilization determinations as developed by the health systems agencies, into the State Health Plan.

For the 1979 edition of the Missouri State Health Plan patient days, occupancy rates, average daily census, and beds per 1,000 population will be used as statewide indicators of acute care service availability. The analysis developed here will be the overall reference for the State in regards to both the National Health Planning Guidelines and acute care need determinants as developed by the health systems agencies.

The methodology for determining the overall Missouri acute care service availability is rooted in the methodology developed by the Iowa Health Systems Agency.² This methodology is, in turn, based on the national health planning guideline target of 4.0 hospital beds per 1,000 population and 80 percent occupancy for all non-federal short-stay hospitals. "It (the methodology) also utilizes the fact that the elderly use/need more hospitalization than younger segments of the population and that rural areas, which need smaller hospital units in order to maintain accessibility, should not expect those smaller units to operate at as high an occupancy rate as larger, urban units."³ As in the case of Iowa, Missouri is a geographical area that is more rural and has a relatively higher concentration of elderly than the national average. Consequently, Missouri potentially needs more beds per 1,000 population than the national average.

Overall, the methodology attempts on a statewide basis to adjust the two national targets of 4.0 beds per 1,000 population and 80 percent occupancy to reflect the socio-demographic differences between Missouri and the United States as a whole.

Basically, the methodology, as adapted for Missouri, utilizes the two national targets in order to implicitly derive a national target patient day use rate. The implied national patient day use rate is then adjusted on a regional basis using the age structure and utilization rates of the population of Missouri.

In brief, the determination of the number of beds needed utilizes the following mathematical relationship:

$$\text{Beds/1,000} = \frac{\text{Patient Days/1,000}}{365 \times \text{Occupancy Rate}}$$

Different age cohorts have different hospital utilization rates, consequently, total patient days will be determined on the basis of number of persons in each age category. Occupancy rates are in turn adjusted for Missouri using the current bed size distribution of hospitals in the state. It is important to note that hospital bed size is used as a proxy for ruralness. The proposed Missouri occupancy rates are then utilized to determine the optimum number of beds per 1,000 population. The complete methodology for these calculations is shown in detail in the following sections. "It should be noted that the methodology could be used with an alternate set of suggested national targets. It proposes a way to equitably distribute a nationwide target across geographic areas that differ socio-demographically from the national average."⁴

Methodology

A. Determination of Missouri Patient Day Use Rate Per 1,000 Population

The following determination starts with the proposed national targets for occupancy rates and beds per 1,000 population, utilizes the implied patient day use rate and then adjusts it to reflect the unique characteristics of Missouri's population.

- Step 1: Determine the implied target nationwide patient day use rate per 1,000 population using the proposed national targets of 4.0 beds per 1,000 population and the national target of 80 percent occupancy (see Table 3.5-10).
- Step 2: Determine the relative weight of patient day use rates per 1,000 population by each of the five age groupings (0-14, 15-44, 45-64, 65-74, 75 and over) (see Table 3.5-11).
 - Substep 1: Compile total patient days of care by age group from 1976 Hospital Discharge survey.
 - Substep 2: Determine percentage of total patient days of care for each age group.
 - Substep 3: Multiply percentage for each age group times total patient days for acute care in 1976 for estimated distribution of total patient days by age group.
 - Substep 4: Divide estimated patient days of care as established in Substep 3 by age cohort population (in 000's) for 1976 to arrive at patient day use rates per 1,000 population by each of the five age groups.
- Step 3: Determine age specific target patient day rates by applying the relative weights from Table 3.5-11 and implied target nationwide patient day use rate from Table 3.5-10.
- Step 4: Determine Missouri age specific patient days for 1983 using the age specific rates from Table 3.5-11 and Missouri 1983 population projections (see Table 3.5-13).
- Step 5: Compute Missouri patient day use rate using the information from Table 3.5-14.

TABLE 3.5-10
NATIONWIDE PATIENT DAY USE RATE PER 1,000 POPULATION

Nationwide Goal, Hospital Beds per 1,000 Population	4.0
Nationwide Goal Occupancy	80.0%
Average Daily Census per 1,000 Population (4.0 X 80%)	3.2
Derived Nationwide Patient Day Use Rate per 1,000 Population (3.2 X 365)	1168.0

TABLE 3.5-11
 PATIENT DAY USE RATES PER 1,000 POPULATION BY AGE GROUP

Year	Total (all ages)	0-14 Years	15-44 Years	45-64 Years	65-74 Years	75+ Years
1976	1337.6	455.5	788.2	1722.0	3352.9	5543.2
Relative Weight	1.00	.3405	.5892	1.2873	2.5066	4.1441

Source: Missouri Hospital Discharge Survey 1976.

TABLE 3.5-12
APPLICATION OF THE RELATIVE WEIGHTS TO THE TARGET PATIENT DAY USE RATE

<u>Age Group</u>	<u>Relative Weight</u>		<u>Target Nationwide Patient Day Use Rate</u>		<u>Age Specific Target Patient Day Use Rate</u>
0-14	.3405	X	1168	=	397.70
15-44	.5892	X	1168	=	688.19
45-64	1.2873	X	1168	=	1503.57
65-74	2.5066	X	1168	=	2927.71
75+	4.1441	X	1168	=	4840.31

TABLE 3.5-13
MISSOURI AGE SPECIFIC PATIENT DAYS, 1983

<u>Age Group</u>	<u>Patient Day Use Rates</u>		<u>1983 Projected Missouri Population (in 1,000's)</u>		<u>Age Specific Patient Days Goal 1983</u>
0-14	397.70	X	1047.701	=	416,671
15-44	688.19	X	2307.038	=	1,587,680
45-64	1503.57	X	974.722	=	1,465,563
65-74	2927.71	X	405.113	=	1,186,053
75+	4840.31	X	270.075	=	1,307,247
Total			5004.649		5,963,214

Source: Population projections derived from estimates developed by the Division of Budget and Planning, Office of Administration, State of Missouri, in cooperation with the Public Affairs Information Service, University of Missouri - Columbia.

TABLE 3.5-14
MISSOURI PATIENT DAY USE RATE PER 1,000 POPULATION

1983 Goal for Patient Days (Total)	5,963,214
1983 Missouri Population (in 1,000's)	5,004.649
Goal, Missouri Patient Day Use Rate Per 1,000 Population (line 1 ÷ line 2)	1191.5

Note: This goal for use rate (1191.5) is 2 percent higher than the national target use rate (1168).

B. Determination of Missouri Overall Community Hospital
Occupancy Rate

The following determination starts with the proposed national goal of 80 percent occupancy and adjusts it for Missouri's proportionally greater number of small facilities.

- Step 1: Determine the optimal occupancy rates for facilities in each bed size category.
- Step 2: Determine the relative weight of optimal occupancy rates by bed size to the overall 1976 optimal occupancy rate (see Table 3.5-15).
- Step 3: Apply the relative weights to the proposed national goal of 80 percent to determine state occupancy rate goals by bed size (see Table 3.5-16).
- Step 4: Determine the Implied Average Daily Census for Missouri hospitals by bed size, using the occupancy rate goals from Table 3.5-16 and the number of beds by bed size in Missouri (see Table 3.5-17).
- Step 5: Determine the overall adjusted occupancy rate goal (see Table 3.5-18).

Theoretically, in a system controlled for all factors, the difference between bed supply and bed need could be determined by calculating what the optimal level of occupancy should be for facilities of any given bed size. The technical requirements for this calculation rule out the use of current utilization figures or the use of formulas that involve an assumed occupancy factor, applied without regard to variation in bed size, such as the Hill Burton method. Of available alternatives tested, only one was found to respond satisfactorily in determining the optimal occupancy. The alternative consists of a modified square root formula:

$$\text{Optimal Occupancy} = \frac{\text{Average Bed Size (ABS)}}{\text{Average Bed Size (ABS)} + 2.33 \sqrt{\text{ABS}}}$$

Note that the optimal occupancy formula is used only for determining the relative differences among facilities of varying bed sizes. It should be stressed that the optimal occupancy calculations alone do not take into account the many and varied factors that control size and utilization of hospital facilities. However, as a first step, the optimal occupancy formula at least allows us to control for differences between institutions of different bed sizes so that we can better compare the total statewide occupancy for all facilities with the National Health Planning Guidelines.

TABLE 3.5-15

Licensed Beds	State Total	Less Than 50	50-99	100-149	150-199	200-249	Over 250
Optimal Occupancy Rate	84.7	71.4	77.9	81.7	84.8	86.0	89.3
Relative Weight	1.0	0.84	0.92	0.96	1.00	1.02	1.05

Methodology: $\frac{\text{ABS for each category}}{\text{ABS for each category}} + 2.33 \sqrt{\text{ABS for each category}} = \text{Optimal Occupancy}$

TABLE 3.5-16

Licensed Bed Size	Relative Weight		National Guideline Standard		Occupancy Rate Goal By Bed Size
Less than 50	0.84	x	80.0%	=	67.2
50-99	0.92	x	80.0%	=	73.6
100-149	0.96	x	80.0%	=	76.8
150-199	1.00	x	80.0%	=	80.0
200-249	1.02	x	80.0%	=	81.6
Over 250	1.05	x	80.0%	=	84.0

TABLE 3.5-17
DETERMINATION OF IMPLIED AVERAGE DAILY CENSUS/ADC BY BED SIZE

<u>Bed Size</u>	<u>Number of Licensed Acute Care Missouri Beds</u>		<u>Implied Occupancy Rate Goal</u>		<u>Implied ADC</u>
Less than 50	785	x	67.2	=	527.5
50-99	3,244	x	73.6	=	2,387.6
100-149	2,187	x	76.8	=	1,679.6
150-199	2,703	x	80.0	=	2,162.4
200-249	1,238	x	81.6	=	1,010.2
Over 250	<u>15,277</u>	x	84.0	=	<u>12,832.7</u>
TOTAL	25,434				20,600.0

TABLE 3.5-18
DETERMINATION OF OVERALL ADJUSTED OCCUPANCY RATE

Total Acute Care Hospital Beds (Licensed)	25,434
Implied Average Daily Census	20,600
Overall Adjusted Occupancy Rate (Line 2 ÷ Line 1)	81.0%

TABLE 3.5-19
1983 GOALS FOR MISSOURI LICENSED ACUTE CARE BEDS

Overall Patient Day Use Rate Goal Per 1,000 Population (annual)	1191.5
Implied Average Daily Census Per 1,000 Population (1191.5÷365)	3.26
Overall Missouri Acute Hospital Occupancy Rate Goal	81.0%
Overall Missouri Licensed Acute Care Hospital Bed/1,000 Population Goal (3.26/.81)	4.03
Goal for Total Number of Licensed Acute Care Hospital Beds in All Categories (see following page for bed size break down)	21,634

Analysis of Statewide Goals for Acute Care Service

The goals for statewide acute care involve the establishment of an appropriate level of hospitalization (patient days/1,000 population) and an appropriate utilization of plant capacity (occupancy rate). The basic principles derived from these goals are as follows:

1. reduce beds in facilities with underutilized plant capacity
2. reduce beds (and encourage alternative modes of care) in areas with unnecessarily high levels of hospitalizations.

Table 3.5-20 uses the implied occupancy rate goals by bed size from a preceeding calculation (Table 3.5-16) and shows the reduction in the number of beds that would be needed to meet the occupancy rate goal.

TABLE 3.5-20

<u>BED SIZE</u>	<u>NUMBER OF FACILITIES</u>	<u>CURRENT NUMBER OF LICENSED ACUTE CARE BEDS</u>	<u>CURRENT ACUTE CARE OCCUPANCY RATE</u>	<u>ACUTE CARE OCCUPANCY RATE GOAL FROM TABLE 3.5-16</u>	<u>NUMBER OF LICENSED ACUTE CARE BEDS NEEDED TO MEET OCCUPANCY RATE*</u>	<u>NUMBER TO BE REDUCED</u>
Less Than 50	23	785	50.7	67.2	592	193
50-99	48	3,244	59.9	73.6	2,640	604
100-149	20	2,107	65.5	76.8	1,865	322
150-199	16	2,703	70.8	80.0	2,392	311
200-249	6	1,238	69.2	81.6	1,050	188
200 +	40	15,277	72.0	84.0	13,095	2,182
TOTAL	153	25,434	69.0	81.0	21,634	3,800

*Current Occupancy x Current Beds = # Filled

Filled = x Occupancy Rate Goal

Number of Beds Needed to Meet Occupancy Rate Goal = x

Several qualifications in the interpretation of Table 3.5-20 should be noted:

1. The intent of this type of planning is not to increase occupancy rates as a result of increasing the intensity of services. On the contrary, future patient day use rates should decrease.
2. Facilities exceeding the stated goals for their bed size category should not consider adding additional beds. Occupancy rates higher than the recommended goal are desirable.
3. It is possible that the use of these calculations at the health service area level may result in a combined input from the Health Systems Agencies which goes over the established statewide goal. Should this occur, it will be the state's responsibility to work out a satisfactory compromise with the five HSA's. This issue is being addressed by a joint committee of the staffs of the five HSA's and the SHPDA.

Accessibility

Acute inpatient services should be available 24 hours a day, seven days a week, and services deemed needed in each health service area should be within 30 minutes travel time for 90 percent of the service area population. Acute care facilities should be physically located where easily accessed by public transportation, emergency vehicles, and automobiles. All facilities should be free of barriers to the handicapped and should not be subject to environmental hazards. Acute care services should also be accessible to all persons regardless of their ability to pay, age, sex, race, or religion. Finally, adequate financial resources should be accessible to help support the provision of acute care services for everyone. Third party payors such as Medicare/Medicaid and Blue Cross-Blue Shield should be available to help assure reasonable payment for appropriately utilized services.

Cost

Between fiscal years 1950 and 1976, personal health expenditures in the United States increased more than tenfold, from \$10.4 to \$120.4 billion, while between 1966 and 1976, personal health care expenditures in Missouri increased nearly threefold from \$829 to \$2085 million.⁵ These increases can be attributed mainly to population growth, higher medical-care prices, and increased utilization of medical services.

Population growth and the aging of the population account for about 10 percent of the increase in health expenditures over the 1950-1976 period. Higher prices for medical care account for 55 percent of the increase over the entire period but 78 percent in the past three years.⁶ The greater importance of price increases in the past three

years reflects the inflationary conditions that plague the entire economy. Utilization, including both intensity and volume of services has risen dramatically over the past 25 years and explains nearly a third of the increase in health expenditures. The higher utilization rates reflect the increased demand for and supply of health care services.

Demand has been encouraged by higher incomes, more insurance coverage, and government subsidies for health care. The relationship between growth in insurance coverage and health expenditures appears particularly strong. Insurance increases the demand for health care because it lowers the price of care at the time of purchase. In 1976, insurance covered about 66 percent of all personal health expenditures, up from 28 percent in 1950.⁷

Medicare and Medicaid are the major federal health care financing programs. In fiscal year 1977, each helped pay for the care of approximately 25 million persons at a cost to the federal government of about \$32 billion.⁸ Medicare, Medicaid, and other government programs directly encourage or subsidize greater use of health care by those individuals who have traditionally had limited access to such care -- the aged and the poor.

Nationally, the tax free status of employer contributions for health insurance and the tax deductibility of large medical expenditures together totalled an estimated \$7.8 billion in revenues in fiscal year 1977. These direct subsidies have also increased the demand for health care.

The federal government has taken a number of steps to increase the capacity of the health sector. Funds for facility development and expansion of manpower training programs have contributed to rapid increases in the number of short-term acute care hospital beds and health professionals. Between 1960-1975, the supply of both hospital beds and health professionals rose by about 50 percent. The federal government no longer encourages expansion, but existing medical school capacity, in particular, will result in about a 60 percent increase in the number of physicians over the next 15 years.⁹

Health expenditures have also been increased by the greater use of laboratory tests and expensive equipment in the provision of care. Over the past six years, the number of laboratory tests per hospital admission has increased by more than 8 percent annually. Expensive coronary care units, intensive care units, and respiratory therapy departments have continued to spread to more and smaller hospitals.

Expansion of the number of health personnel and facilities appears to have enlarged the demand for health care, causing further increases in health expenditures. With more and better facilities available, physicians appear more likely to refer patients to specialists, make more use of hospitals, and use more intensive diagnostic and therapeutic procedures.

The rapid, sustained growth of hospital expenditures, attributable to the increased demand, has made hospitals the focus of regulatory efforts to control health expenditures. The way in which the factors of demand and supply have worked together to raise expenditures is particularly applicable to hospitals. As more facilities and equipment become available, as technology improved them, and insurance covered them, physicians became dependent upon their use.

The focus on inpatient care services precluded development of less costly non-hospital alternatives.

Hospital care is the largest component, about 48 percent in Missouri, of health expenditures today.¹⁰ Ten years ago, hospitals accounted for about 34 percent of all health expenditures. Between 1950 and 1976, total hospital expenditures increased more than 14 times and per capita expenditures for hospital care increased about 9 times.¹¹

About 90 percent of the increase in per capita expenditures for care in short-term general hospitals resulted from higher costs per patient day and only 10 percent from an increase in the number of days per capita.¹²

The rise in hospital costs has been encouraged by the way in which hospitals are reimbursed by federal financing programs and private insurance. The majority of hospital reimbursements are based on reasonable costs incurred; this means that the added cost of new beds or equipment may be readily offset by higher revenues. The pressures of hospitals to expand the scope and quality of their services are intensified by increasing numbers of physicians demanding more equipment and by the increasing availability of sophisticated medical care technologies. Since purchase of expensive equipment and technologies adds to the prestige of the institution and involves little financial risk, there is an incentive to acquire excess capital, both in beds and equipment.

As discussed in this section, there are many reasons for the escalation of hospital costs and most are well-known. Like inflation in the economy, the curtailment of rising costs in health care has defied any logical solution. Broad strategies, such as the voluntary cost effectiveness program of the hospital association, have been advanced and retained in the absence of promising alternatives. Decreasing the reliance of the population on acute inpatient care, the most costly type of care available, is one such strategy.

Since the use of acute inpatient care services appears to be strongly influenced by availability of such services including acute care beds, a specific aspect of the strategy is to reduce, as much as is practical, the availability of these beds while increasing the efficiency in the use of existing resources.

The decrease in acute inpatient care would logically run concurrently with the increased use of other kinds of care (e.g., ambulatory care) wherever possible. Also important, is increased emphasis on promotion of good health habits and preventive medical care.

It has become apparent that cost effectiveness strategies in acute (hospital) care must be analyzed relative to the supply and demand for health care services. The design of a cost effectiveness strategy must be derived from an analysis of how the basic components of cost can be most effectively influenced.

Cost effectiveness can be presented in terms of supply and demand modification, as well as other factors of the health care system set in motion by related planning and regulatory action.

Public Law 93-641 addresses cost in a strategy consisting of twelve components which refer directly to specific sections of the law:

1. Controlling Capital Expenditures
 - a. Certificate of Need
 - b. Section 1122
 - c. Technological Evaluation
 - d. Other Analytical Approaches
2. Identifying and Reducing Excess Facilities and Services
 - a. Appropriateness Review
 - b. Licensure
 - c. Conversion/Closure
 - d. Shared Services
3. Enhancing Efficiency of Facility Design and Operation
 - a. Modernization
 - b. Construction/Equipment/Operating Costs
 - c. Minimum Standards
 - d. Life Safety
 - e. Management/Financial Systems
 - f. Energy
4. Promoting Alternatives to Inpatient Care
 - a. Medical Group Practice
 - b. HMOs
 - c. Outpatient Facilities
 - d. Ambulatory Surgery
 - e. Home Health Care
 - f. Pre-admission and Post-discharge Testing
 - g. Progressive Patient Care
 - h. Hospices
5. Linking Planning with Reimbursement
 - a. Rate Setting
 - b. Uniform System for Rate Calculation
 - c. Uniform Cost Accounting
 - d. Uniform Output Measurement
 - e. Interaction with Third-Party Payors
 - f. Interaction with Employer & Employee Contributed Health Plans

6. Fostering Geographically and Service Integrated Health Care Delivery
 - a. Multi-hospital Systems
 - b. Special Area Needs
7. Modifying Provider Behavior, Attitudes, and Use
 - a. PSRO/Utilization Review
 - b. Licensure Requirements
 - c. Training
 - d. Spatial Allocation
 - e. Role of Non-physician
 - f. Defensive Medicine
8. Modifying Consumer Behavior and Attitudes
 - a. Health Education
 - b. Self-care
9. Promoting Cost-Effective Preventive Care
 - a. Cost-Benefits of Preventive Services and Treatment
10. Assessing and Modifying Role of Environment/Occupational Factors
11. Developing Measures of Impact on System Performance, Requirements, and Responses
 - a. Cost Indicators
 - b. Resource Indicators
 - c. Health Status
 - d. Allocative/Distributive Models
 - e. Data Problems/Methods
 - f. Regulatory Incentives/Disincentives
12. Communicating the Cost Containment Responsibilities Inherent in Health Planning

Awareness and concern for the consequences of continuing to utilize finite resources in health services as if such resources were infinite, and with the identified amount of excess hospital capacity indicates there is much which should and can be done to contain costs just by reducing excess capacity.

In summation, a recent National Center for Health Services Research Discussion Paper ("Controlling the Cost of Health Care") described the philosophy of cost containment as follows:

"In many ways, the current emphasis on cost containment is a reflection of the success of past policy coupled with a growing awareness of the limitations of simple expansion of resources for achieving health care goals. As the opportunity costs associated with rapidly rising health care expenditures begin to impinge on the achievement of other public objectives, there is created a need for reassessing policies with an eye toward moderating the incentives for expanded expenditures while protecting the central public comment to the achievement of positive health goals. Rather than being the central goal of health care policy, cost containment is the context within which the basic, positive goals of public health care policy must be pursued.

This distinction is critical. Many of the incentives for rising medical care expenditures are the result of public policy. Cost containment strategies which are designed to modify these incentives will limit the achievement of other health objectives. Such a circumstance is not necessarily undesirable. We are moving from pursuing health goals at any price to a realization that limited resources require deliberate choices. The goal of the best for everyone provides no guidance for making trade-offs among alternative uses of resources when that goal cannot be immediately achieved. The reality of resource constraints makes trade-offs inevitable, and the choices which will be exercised in the system will reflect the options available and the incentives and disincentives faced by the decisionmaker."

Quality

Acute care hospitals should minimally meet the standards of the Joint Commission on the Accreditation of Hospitals (JCAH) or those of the American Osteopathic Association along with the normal Missouri State Licensure and Accreditation standards as applicable.

At the present time, Professional Standards and Review Organizations (PSRO) are responsible for assessing the appropriateness and quality of patient care in facilities.

Acceptability

Respect of human rights and dignity should be thoroughly considered in delivering acute inpatient care services. In the past few years, there have been increased efforts to secure a common patients "bill of rights."

This bill of rights as applied in acute care hospitals should include at least the following:

- a. The right to considerate and respectful care.
- b. The right to obtain current information regarding diagnosis, treatment, and prognosis.
- c. The right to obtain information sufficient to give informed consent.
- d. The right to refuse treatment.
- e. The right to a reasonable level of privacy regarding the medical care program.
- f. The right to confidentiality of medical records.
- g. The right to reasonable response by the hospital to the patient's request for service.
- h. The right to information regarding the relationships of the hospital to other institutions and the relationships among professionals who are providing care to the patient.
- i. The right to information regarding any proposed experimentation in treatment of care and the right to refuse to participate.
- j. The right to reasonable continuity of care.
- k. The right to an explanation of the patient's bill.
- l. The right to information regarding hospital rules that apply to the patient's conduct.

Source: American Hospital Association.

Continuity

Each acute care facility should develop and maintain, insofar as it is capable and appropriate, a system of varying levels of care, or continuum of patient care within its organizational structure. Linkages in the acute care inpatient sector include emergency medical services, primary and secondary physician offices, outpatient and ambulatory facilities and services, other acute hospitals with more intense services, long term care facilities, long term rehabilitation facilities and both outpatient and inpatient mental health services. Each facility should have established mechanisms which provide for ease of access and transfer to these services.

Comparative Analysis

Availability

It is the Statewide Health Coordinating Council's intent to utilize data generated from the Cooperative Health Statistics System (CHSS), the Missouri Hospital Discharge Survey, and the Health Systems Agencies (HSAs) in development of the acute care component of the State Health

Plan and its further refinement in future editions and in development of the Medical Facilities Plan. The use of licensed beds in the acute care goal level determinations at this time does not preclude further refinement of the methodology or a change in hospital bed definitions.

Based on data from calendar year 1977, as reported in the Missouri Hospital Profiles, there was a total of 25,434 acute care hospital beds licensed in the State of Missouri. Broken down by health service area, Area V (Poplar Bluff) had the least number of beds at 2,401 while Area III (St. Louis) had the greatest number at 10,322. Acute care beds listed by HSA and size of facility are shown in Table 3.5-21 on the following page. Data on discharges, patient days, occupancy rates, average daily census, and average length of stay is shown in Table 3.5-22 on the following page. Occupancy ranged from 64.3 percent in Area II to 71.6 percent in Area III. The average length of a hospital stay ranged from 6.3 days in Area V to 8.3 days in Area III. Although not directly reflected statistically, these figures reflect differences in levels of care among the HSAs. Among the urban health service areas a great deal of tertiary inpatient care is provided, while in Area V, a rural health service area, the hospitals tend to concentrate on provision of primary care services with some mix of secondary and tertiary care.

The goal levels of the availability indicators (hospital beds/1,000 population, patient days/1,000 population, and percent occupancy) are to be considered expressions of the optimal statewide 5 year goal levels for utilization. The current indicator levels reflect present utilization. Based on an estimated state population of 4.8 million in 1977 and a projected population of 5.005 million in 1983, the differences between state goals for 1983 and current levels of acute care services and the estimated excess service are shown in Table 3.5-23. Goal levels for average length of stay have not been developed.

TABLE 3.5-23
COMPARISON OF CURRENT & DESIRED
ACUTE CARE SYSTEM IN MISSOURI

	Current System in Missouri	Missouri 1983 Goals	Desired Change
Acute Care Licensed Beds	25,434	21,634	-3,800
Acute Care Beds/1,000	5.3	4.03	- 1.27
Occupancy Rate	69.00%	81.00%	+12.00%
Patient Days/1,000	1337.60	1191.50	-146.1
Average Daily Census/ 1,000	3.66	3.26	- 0.4

TABLE 3.5-21

NUMBER OF ACUTE CARE HOSPITALS* AND LICENSED ACUTE CARE BEDS
BY HSA AND STATE: MISSOURI 1977

LICENSED BED SIZE**	HSA I		HSA II		HSA III		HSA IV		HSA V		STATE TOTAL	
	HOSPITAL	ACUTE BEDS	HOSPITAL	ACUTE BEDS	HOSPITAL	ACUTE BEDS	HOSPITAL	ACUTE BEDS	HOSPITAL	ACUTE BEDS	HOSPITAL	ACUTE BEDS
<50	4	123	11	381	1	36	4	121	3	124	23	785
50-99	2	113	23	1,644	1	70	12	838	10	579	48	3,244
100-149	4	468	7	730	2	248	1	76	6	665	20	2,187
150-199	2	334	5	872	6	998	1	161	2	338	16	2,703
200-249	1	225	1	209	3	584	--	--	1	220	6	1,238
250+	11	3,977	3	925	21	8,386	3	1,514	2	475	40	15,277
TOTAL	24	5,240	50	4,761	34	10,322	21	2,710	24	2,401	153	25,434

*Does not include facilities which are owned by the State and Federal Government.

**Hospitals are classified by total licensed bed size. Acute beds, occupancy rate, and patient days of care reflect only those beds licensed and used as acute care beds.

TABLE 3.5-22

SUMMARY OF PATIENT STATISTICS, FOR TOTAL ACUTE INPATIENT CARE: MISSOURI 1977
(INCLUDES MEDICAL/SURGICAL, OBSTETRICS, PEDIATRICS, AND OTHER ACUTE)*

HEALTH SYSTEMS AREA	DISCHARGES	PATIENT DAYS OF CARE	OCCUPANCY RATE (%)	AVERAGE DAILY CENSUS	AVERAGE LENGTH OF STAY (DAYS)
HSA I	174,617	1,329,893	69.5	3,643.5	7.6
HSA II	161,398	1,117,954	64.3	3,062.9	6.9
HSA III	324,448	2,699,327	71.6	7,395.4	8.3
HSA IV	100,065	685,540	68.7	1,878.2	6.8
HSA V	90,445	570,407	65.1	1,562.8	6.3
STATE TOTAL	850,973	6,403,121	69.0	17,542.8	7.5

*Does not include facilities which are owned by the State and Federal Government.

Source: Missouri Hospital Profiles for 1977. Bureau of Hospital Licensing and Construction, Missouri Division of Health.

It is necessary to plan for acute care services at the state level. However, it should be acknowledged that the best understanding of the needs of the local population will be found at the local and health service area level. The occupancy, beds/1,000 population, and patient day goals developed in the State Health Plan are intended to be used as guidelines for the HSAs and should allow for the differing characteristics of rural and rural hospitals. The health systems agencies have the responsibility to determine the optimal levels of utilization and bed need in their respective health service areas and to justify exceptions from statewide goal levels based on the National Health Planning Guidelines and on local circumstances. Only in this way will sufficient flexibility be 'built in' to accommodate the differences between low occupancy in rural Missouri and high bed concentration in urban Missouri.

Accessibility

With the addition of the Reynolds County Hospital in health service area V, primary acute care medical services are accessible within 30 minutes driving time at 55 m.p.h. to more than 90 percent of population of the state (see General Medical Services in the appendix).

Cost

Trends in available information¹³ indicate that medical care costs and in particular hospital based inpatient care will continue to rise at a rate greater than that of the other sectors of our economy. Table 3.5-24 illustrates the rise in hospital costs per patient day for the years 1960 through 1965. A summary of the percent of total increase is separated into costs due to inflation and costs due to new services. While inflation began to rise noticeably in 1965, the rate of growth of new services and non-labor parts of these services have also risen dramatically. The difference in the cost of an inpatient hospital day in 1950 (\$15.62) and that in 1975 (\$151.23) appears great. However, the large increase has not reduced the demand for hospital care, mainly because the cost to the patient at the time the money is expended has risen much more slowly than the real cost. The out-of-pocket expenditure has increased only \$10.00 from 1950.¹⁴ This small increase reflects the growth in public and private insurance which accounted for 50 percent of the inpatient revenues in 1950 and about 90 percent in 1970.¹⁵ The result is that the small increase in out-of-pocket hospital costs has been exceeded by general inflation, thus the consumer gives up less of other goods and services today to buy medical care than he/she would have in 1950.

The growth in acute hospital expenditures has been highly dramatic in both abstract terms and relative to the rate of inflation for the total economy. In Missouri, specific information to determine cost-effectiveness has not been assembled on a statewide basis, however, the SHCC-SHPDA and the HSA's will be assembling a data base from the Medicare Cost Reports. This information will be analyzed from a statewide viewpoint in future editions of the Missouri State Health Plan.

TABLE 3.5-24
SOURCES OF INCREASE IN HOSPITAL COST PER PATIENT DAY:
SELECTED FISCAL YEARS 1960 - 1976

Item	AVERAGE ANNUAL PERCENT INCREASE						
	1960- 1965*	1965- 1976	1967- 1971	1971- 1973	1974	1975	1976
Total Increase	6.7	10.4	14.0	10.5	9.8	15.8	14.7
Increase in Wages & Prices	3.4	3.9	7.8	5.2	6.8	10.7	8.3
Wages	4.7	4.8	9.9	6.3	5.2	9.8	9.0
Prices	1.3	2.6	4.8	3.8	9.0	11.0	7.1
Increases in Services	3.3	6.5	6.2	5.3	3.0	5.1	6.4
Labor	1.7	3.9	2.9	2.3	0.7	2.7	2.2
Other (non- labor, e.g., x-rays, lab tests, etc.)	5.9	10.5	11.0	9.3	6.0	7.5	10.6
Percent of total increase due to:							
Wages and Prices	50.7	37.5	55.7	49.5	69.4	67.7	56.3
Services	49.3	62.5	44.3	50.5	30.6	32.3	43.7

Sources: Price data are from the Consumer Price Index, Bureau of Labor Statistics. All other data are from Hospitals, Guide Issue, August 1, various years, and American Hospital Association, Hospital Statistics, 1973 Edition. Data for fiscal years 1973-1976 are from the Hospital Panel Indicators Survey.

*Figures calculated on a per patient day basis; figures for all other periods are calculated on a per adjusted patient day basis. The latter include an approximation of equivalent services to outpatients.

As succinctly stated in the Mid-America Health Systems Agency's Health Systems Plan, increases in inpatient hospital costs in the State of Missouri can be attributed to:

1. The lack of a Certificate of Need program;
2. Institutional planning activities that have focused predominantly on facility needs; and
3. Community and appellate agency decisions regarding the use of local health resources based on civic pride or perceived economic gain, instead of documented medical needs.

Inflation and higher worker wages have also contributed greatly to increases in inpatient hospital costs.

It is expected that the health systems agencies will address acute hospital cost in detail in their health service areas. Their implementation with the aid of the state agency, should be directed toward development of "equitable, rational, community wide and institutional health planning."

Quality

At the present time, measures/indicators of the quality of inpatient hospital services in Missouri have not been assembled. The SHCC-SHPDA has taken the position that this responsibility is rightly placed with the Professional Standards and Review Organizations (PSRO).

Acceptability

There are no indicators of inpatient care acceptability presently available on a statewide basis. The SHCC-SHPDA will in the next project year attempt to determine conformance to established patient's bill of rights.

Continuity

Formal linkages between and among services and medical settings are difficult at best to identify. However, it is evident that formal referral patterns and linkages have not been established in many cases.

EFFECT OF PROPOSED CHANGES ON HEALTH CARE SYSTEM IN MISSOURI

No recommendation for proposed changes should omit a discussion of the implication of those changes to the system. As stated by the Iowa Health Systems Agency:¹⁶

"A reduction in the number of hospital beds will have both positive and potentially negative effects on the health care delivery system. Bed reductions serve to raise the overall occupancy rates and consequently, if considered over a long period of time, to reduce health care costs from what they might otherwise be. For example, voluntarily removing staffed beds from service could result in savings of personnel salaries. Also, if a community service group moves into the previously staffed area, depreciation, interest, utilities, and other related costs of that area can be recovered from that group as rent. A reduction in beds would also result in future capital investment related cost savings.

Since current construction costs for new (not previously existing) inpatient beds and ancillary service range from \$50,000 to \$130,000 per bed, not including financing charges, a reduction in the number of beds to be renovated or replaced can result in a significant savings. By minimizing construction and renovation costs, (scarce) capital could be used in other areas. A reduction in beds could also be expected to have an affect on the way some medical services are provided. As the number of empty inpatient beds is decreased, it can be expected that there would be an increased emphasis on outpatient diagnosis and treatment services (e.g., pre-admission testing, organized day surgery). Such a reduction could also be expected to put an increased emphasis on early discharge planning programs, provision of care in skilled nursing facilities, and increased utilization of home health services. Current logic concluded that bed reductions could lead to cost savings for consumers of health care.

Other positive effects could be found in communities with more than one hospital, in that a reduction in the number of beds available could result in physicians seeking admitting privileges in more than one facility. It could also result in higher occupancy rates in rural areas due to physicians from referral center hospitals (with specialized equipment and care) sending patients back to their local primary care facility when the follow-up care could be provided at that level.

As indicated earlier, potentially negative effects could also result from an increase in occupancy rates. Inconvenience for patients and physicians (either actual or potential) could be expected to increase. Increased occupancy rates would result in fewer empty beds; consequently elective admissions would require sophisticated scheduling procedures, and delays of such admissions could increase. Also, if alternatives to inpatient care are not available, patients may not receive care in a timely manner."

STRATEGIES FOR ACHIEVING HOSPITAL BED REDUCTIONS AND UTILIZATION INCREASES

The following basic strategies are recommended as actions that could lead to the reduction in hospital bed capacity and appropriate increases in hospital utilization.

1. Identify existing hospital service areas.
2. Assist hospitals in identifying alternative cost-effective uses for under-utilized capacity.
3. Encourage and assist in the development of incentives to convert underutilized capacity to cost-effective alternative uses.
4. Develop models for the delivery of diagnosis and treatment services on an outpatient basis.
5. Encourage development of incentives for the provision and use of outpatient services.
6. Make recommendations for the Medical Facilities Plan based on priorities of needed modernization, conversion, and replacement projects. (Note: This strategy relates to the provision of Title XVI of P.L. 93-641. This plan is a requirement for receiving Title XVI monies when/if they become available.)
7. Improve data collection activities and clarify definitions of terms.
8. Encourage continuing education programs on health and medical economics for hospital boards of directors, medical staffs, administrative staffs, and consumers.
9. Encourage the development of a consumer education package relating to changing patterns of care.
10. Encourage improved scheduling of elective admissions in hospitals.
11. Encourage multi-hospital planning activities.
12. Encourage the consolidation of specialty units in multi-hospital communities.
13. Encourage development of the swing bed concept in hospitals with low census.

Conclusion

The desired goal levels established in this component are to be considered expressions of optimal 5 year levels of utilization. It is recognized that achievement of the desired goal levels have an associated time span that may exceed the five year planning cycle. However, strategies based on the goals will be expanded in future editions of the State Health Plan and in the Medical Facilities Plan in order to define a timetable for future activities.

It should also be clearly understood that the goal levels and their consistency with the National Health Planning Guidelines do not necessarily relate to individual hospitals, health service areas, or similar divisions, but are statewide goal levels. The purpose of these goal levels is to establish direction and provide benchmarks for evaluation of progress. The goal levels are intentionally presented as being relatively broad. At the state level, the State Health Planning and Development Agency (SHPDA) and SHCC must address the needs of the overall state and state government.

Therefore, the following principles are implicitly established by the National Health Planning Guidelines through the Missouri SHPDA bed need methodology and will be used as a basis for determining actions relative to optimal levels of utilization and bed supply.

1. On a statewide basis, no expansion of the existing acute care inpatient bed supply is necessary at this time.
2. Wherever possible, the current bed potential in existing facilities should be utilized to absorb any increases in acute care need due to population changes.
3. Health Systems Agencies are expected to examine acute care supply and demand in their areas to assure that the bed supply in their health service areas will be sufficient for the next five years.
4. Where the health systems agencies, after review by the SHCC, determine that the supply of beds will be insufficient in a health service area or a portion of it, the health systems agencies are expected to work closely with the facilities involved to facilitate the development of the number of beds that will relieve the deficit.

Goals, Objectives, and Actions

GOAL: BY 1984, THE TOTAL NUMBER OF EXCESS LICENSED ACUTE CARE BEDS SHOULD BE REDUCED BY 3,800 FROM 25,434 TO 21,634. THE STATEWIDE LICENSED ACUTE CARE BED GOAL LEVEL SHOULD BE APPLIED BY BED SIZE AS FOLLOWS:

Less than 50	592
50-99	2,640
100-149	1,865
150-199	2,392
200-249	1,050
250+	13,095

GOAL: BY 1984, THE NUMBER OF LICENSED ACUTE CARE HOSPITAL BEDS PER 1,000 POPULATION SHOULD BE REDUCED FROM 5.3 TO 4.03.

GOAL: BY 1984, THE STATEWIDE AVERAGE PERCENT OCCUPANCY SHOULD BE INCREASED FROM 69.0 PERCENT TO 81.0 PERCENT. THE STATEWIDE OCCUPANCY RATE GOAL SHOULD BE APPLIED BY BED SIZE AS FOLLOWS:

Less than 50	67.2%
50-99	73.6%
100-149	76.8%
150-199	80.0%
200-249	81.6%
250+	84.0%

GOAL GOAL: BY 1984, THE STATEWIDE AVERAGE NUMBER OF PATIENT DAYS PER 1,000 POPULATION SHOULD BE REDUCED BY 146.1 FROM 1337.6 TO THE LEVEL OF 1191.5.

National Health Planning Guidelines

General Hospitals - Bed Supply and Occupancy Rates

There is a consensus nationwide that the number of general hospital beds in the United States is in excess of the needed number of beds. "Excess bed capacity and use contribute to the high cost of hospital care with little or no health benefits."¹⁷ However, the exact number of beds to be reduced and by what method has been an undecided question for some time. The National Health Planning Guidelines have been established for SHCC-SHPDA's and Health Systems Agencies to provide the initial leadership and benchmark for their planning efforts.

"There has been considerable controversy surrounding the National Health Planning Guidelines. The mistaken assumption is that there would be a wholesale closing of hospitals which don't "measure up." This is not the case. A hospital can be forced to close only if state regulatory agencies withdraw their authorization/license to operate a hospital or if government and third party payors choose to alter reimbursement policies to the extent that capital funds can no longer be acquired by the facility. The Missouri SHCC has an advisory role to such organizations."¹⁸

It should be noted that the closing of whole facilities is among the alternatives for achieving a higher statewide occupancy rate. However, closing hospitals in Missouri would, in many cases, result in serious accessibility problems. Recommendations which might result in the closing of a hospital when there is overwhelming evidence that such action would not result in the community's being denied appropriate accessibility to hospital services is the favored response.

National Standards

- a. There should be less than four non-Federal short-stay hospital beds for each 1,000 persons in a health service area except under extraordinary circumstances. For purposes of this section, short-stay hospital beds include all non-Federal short-stay hospital beds (including general medical/surgical, children's, obstetric, psychiatric, and other short-stay specialized beds). Conditions which may justify adjustments to this ration for a health service area include:
 1. Age: Individuals 65 years of age and older have a higher hospital utilization rate -- up to four times that of the general population -- than any other age group. Bed-population ratios for health service areas in which the percentage of elderly people is significantly higher (more than 12 percent of the population) than the national average may be planned at a higher ratio, based on analyses by the HSA.

2. Seasonal population fluctuations: Large seasonal variations in hospital utilization may justify higher ratios. Plans should reflect vacation and recreation patterns as well as the needs of migrant workers and other factors causing unusual seasonal variations.
 3. Rural areas: Hospital care should be accessible within a reasonable period of time. For example, in rural areas in which a majority of the residents would otherwise be more than 30 minutes travel time from a hospital, the HSA may determine, based on analyses, that a bed-population ratio of greater than 4.0 per 1,000 persons may be justified.
 4. Urban areas: Large numbers of beds in one part of a Standard Metropolitan Statistical Area (SMSA) may be compensated for by fewer beds in other parts of the SMSA. Health service areas which include a part of an SMSA may plan for bed-population ratios higher than 4.0 beds per 1,000 persons reflecting existing patterns if there is a joint plan among all HSAs serving the SMSA which provides for less than 4.0 beds per 1,000 persons in the SMSA as a whole.
 5. Areas with referral hospitals: In the case of referral institutions which provide a substantial portion of specialty services to individuals not residing in the area, the HSA may exclude from its computation of bed-population ratio the beds utilized by referred patients who reside outside both the SMSA and the HSA in which the facility is located.
- b. There should be an average annual occupancy rate for medically necessary hospital care of at least 80 percent for all non-Federal, short-stay hospital beds considered together in a health service area, except under extraordinary circumstances. Conditions which may justify an adjustment to this standard for a health service area include:
1. Seasonal population fluctuations: In some areas, the influx of people for vacation or other purposes may require a greater supply of hospital beds than would otherwise be needed. Large seasonal variations in hospital utilization which can be predicted through hospital and health insurance records may justify an average annual occupancy rate lower than 80 percent based on analyses by the HSA.

2. Rural areas: Lower average annual occupancy rates are usually required by small hospitals to maintain empty beds to accommodate normal fluctuations of admissions. In rural areas with significant numbers of small (fewer than 4,000 admissions per year) hospitals, an average occupancy rate of less than 80 percent may be justified, based on analyses by the HSA.

Discussion

Consistency with the National Health Planning Guidelines for Hospital Bed Supply on a statewide basis is developed through the methodology previously described in this component. Adjustments for conditions specific to Missouri are discussed in those sections. The statewide goals and principles which follow from national guidelines are meant to be applied only at the statewide level for guidance and direction rather than to specific hospitals.

The Health Systems Agencies are encouraged to use lower bed rates per 1,000 population and higher occupancy rates where practical. Along with other adjustments and exceptions to the Guidelines, the health systems agencies should take into account:

1. situations where health systems agencies rely on resources outside of their health service area for tertiary care services, or where the population of the health service area makes substantial use of outside** resources.
2. situations where hospitals in a health service area provide a substantial amount of services to residents of other health service areas.

**outside the health service area.

Consistently applied, the methodology developed in this year's edition of the Missouri State Health Plan should provide sufficient guidance for health systems agencies while demonstrating consistency with the National Health Planning Guidelines.

For the present edition of the Missouri State Health Plan, the adoption of the bed supply methodology, as consistent with the National Health Planning Guidelines, is recommended.

Health systems agencies desiring to justify an exception or make an adjustment to the National Health Planning Guideline standards, as outlined in this section, for their health service area, must document such exceptions or adjustments. This analysis must be consistent with the agreed upon approach.**

**Guidance Document for Development of Health Systems Plans, Revised.

ENDNOTES

¹National Health Planning Guidelines.

²Iowa Health Systems Agency, Staff Position Paper: Acute Care Bed Needs and Occupancy Rates and Report of the Iowa Bed Need and Occupancy Rate Task Force.

³Ibid.

⁴Ibid.

⁵Health Care Expenditures in Missouri, Hicks, Lanis; Missouri State Health Planning and Development Agency, July 1978.

⁶Expenditures for Health Care, Federal Programs and Their Effects; Background Paper prepared by the Congressional Budget Office, U.S. Government Printing Office, October 1977, p. IX.

⁷Ibid., p. X.

⁸Ibid.

⁹Ibid.

¹⁰Health Care Expenditures in Missouri, op.cit.

¹¹Midwest Center for Health Planning.

¹²Congressional Budget Office, op.cit.

¹³Health Care Expenditures in Missouri, op.cit.

¹⁴Martin Feldstein and Amy Taylor, "The Rapid Rise in Hospital Costs," Staff Report for the Council on Wage and Price Stability, January 1977.

¹⁵Congressional Budget Office, op.cit.

¹⁶Iowa Health Systems Agency, op.cit.

¹⁷National Health Planning Guidelines.

¹⁸Iowa Health Systems Agency, op.cit.

SECTION 3.6

HABILITATION/REHABILITATION SERVICES

PHYSICAL MEDICINE/REHABILITATION
HABILITATION OF DEVELOPMENTALLY DISABLED
PERSONS
THERAPY SERVICES

It is important to define what is meant by the terms "habilitation" and "rehabilitation". For the purpose of this State Health Plan, the following definitions will apply:

Habilitation: "The process of taking an individual to as high a functional degree as he/she is capable of attaining."

Rehabilitation: "The process of returning an individual to as high a functional degree as possible following the onset of a disabling illness/injury."¹

I. PHYSICAL MEDICINE/REHABILITATION

Introduction

There are a variety of patients who benefit from physical medicine and rehabilitation care. In terms of broad categories of patients who need restorative care, there are those patients who need it because of an organic disorder, a surgical procedure, or an accident, which resulted in a loss of or permanent damage to, organs, limbs, or body systems. These afflictions range from cleft palate to paraplegia or handicapping strokes with the latter patients requiring long term restorative care.

"The convalescent care of these people is characterized by the fact that much of it has to be devoted to the process of psychologically, physically, and occupationally rehabilitating them to the point where they can make the most efficient use of their now permanently reduced physical resources."²

Physical medicine and Rehabilitation Care can be provided in a variety of settings: conventional hospitals, rehabilitation inpatient facilities, nursing homes, and the patients' homes. This discussion will focus on hospitals and rehabilitation facilities where the most intensive restorative care is provided. The discussion of therapy services at the end of this section will focus primarily on services in nursing homes and the patients' homes.

Desired System

Availability

For the types of patients described above, rehabilitation services should be available without undue hardship. There should be sufficient manpower at the treatment site to form a rehabilitation team (physician with appropriate expertise, therapists, rehabilitation counselors, and nurse specialists) who could deliver the package of services to satisfy the patient needs.

Accessibility

The source and adequacy of financial reimbursement for rehabilitation care varies from patient to patient. It is desired that each patient should be able to be rehabilitated to his/her optimum functioning level and that financial accessibility should not be an obstacle to the receipt of needed services. In addition to financial accessibility, it is desirable that clients have easy physical access to buildings where health care is provided.

Acceptability

Patients and their families need both education and counseling to make necessary adjustments in lifestyle and to become proficient at the necessary rehabilitative health care skills.

* = will not be addressed at this time.

Quality

The 1978 Joint Commission on Accreditation of Hospitals (JCAH) has an expanded section on Criteria and Standards for Rehabilitation Programs and Services. It is desirable that hospital rehabilitation units follow these guidelines where feasible.

Cost

Proportionally fewer health care dollars are spent on prevention and rehabilitation services than on other types of medical care.³ One possible method of better utilizing available rehabilitative care monies is the use of rehabilitation treatment in day hospital programs. This setting can provide programs of active rehabilitation by offering the full range of therapeutic and ancillary (x-rays, pharmacy, clinical laboratory) services within the parent hospital while reducing costs.⁴

Taking this concept one step further, Dr. Leonard Policoff, in his Presidential address to the American Congress of Rehabilitation Medicine in 1972, offered the following insight into future cost-effective directions in this field.

"The realities of limited fiscal resources, will, for the next decade or so, require the emphasis to be on the development of day-care programs, home care programs, and out-patient care programs, with flexible delivery hours and days to meet the consumer needs. There will be a concomitant deemphasis on in-patient care except for the most severely disabled, and a reallocation of available space away from bed . . . to multi-use day time treatment space."⁵

Continuity

Continuity of care was described briefly under Availability. Many patients will require a rehabilitation team of specialists. These individuals should function well together with a high degree of coordination.

Comparative Analysis

Availability

The Division of Health, Bureau of Hospital Licensure and Certification's Survey of Hospitals reports that the following number of physical medicine and rehabilitation beds are within so-designated hospital nursing units in non-federal facilities:

HSA I	-	54 beds
HSA II	-	106 beds
HSA III	-	271 beds
HSA IV	-	106 beds
HSA V	-	46 beds

It should be noted that in hospitals without distinct physical medicine/rehabilitation units patients are often placed in medical/surgical beds where they may receive comparable rehabilitation services. Consequently, the identification of "designated rehabilitation units" as a measure of the availability of hospital-based restorative care is not all-inclusive.

Occupancy rates in designated rehabilitation units in the state range from approximately 12 percent to 90 percent. Although the average length of stay will vary with the intensity of services offered and the patient mix within units, the average length of stay in Missouri ranges from 7.7 days to 34.2 days. The overall adequacy in numbers of inpatient beds will not be addressed in this edition of the State Health Plan. However, despite the desirability of delivery settings (previously discussed under Cost) it should be mentioned here that of the thirteen distinct physical medicine/rehabilitation units across the state, only seven of these units have outpatient rehabilitation services.

In the area of manpower availability, a 1970 Bulletin published by the Commission of Rehabilitation Medicine recommends that there should be one physiatrist (or M.D. with a specialization in physical medicine) per 100,000 population.⁶ Based upon the 1977 estimated population there should be 48 such doctors in Missouri. There are currently 32 M.D.'s practicing in Missouri with a speciality in Physical Medicine and Rehabilitation and the following distribution:

HSA I (Missouri only)	- 6
HSA II	- 12
HSA III (Missouri only)	- 11
HSA IV	- 3
HSA V	- 0

Accessibility

Among the funding sources utilized by rehabilitation patients are: Medicare, Medicaid, Veteran's Administration Programs, Civilian Health and Medical Program of the Uniformed Services, Crippled Children's Services, Vocational Rehabilitation, Workman's Compensation, and private health insurance. Coverage is sometimes limited by non-inclusion of certain services or appliances, by length of stay, or by the requirement of the existence of the disability for a certain length of time. Some insurance policies simply do not include rehabilitation services or will pay for only a portion of total rehabilitation services.⁷

Data on the extent to which architectural barriers limit patient accessibility is not available at this time. The situation is improving, particularly in regard to health care facilities and buildings which house programs that are federally funded, due to recent legislation mandating access for the physically handicapped. However, accessibility to medical buildings within the private sector has not been determined.

Acceptability

No survey instrument has been developed for statewide use to determine how much counseling and education is given to the rehabilitation patient and his/her family or how sophisticated such services may be when rendered.

Quality

The extent to which physical medicine and rehabilitation units are meeting the 1978 JCAH criteria and standards has not been determined at this time. Future editions of the State Health Plan will address this issue.

Cost

A St. Louis facility is currently developing a day hospital program in the area of rehabilitation for the geriatric patient. According to their cost projections, "even after taking into consideration changes in patient volume and inflation, the cost of providing day hospital services is less than half of the cost of inpatient restorative care."⁸ Unfortunately, a major barrier to the implementation of this program is inadequate Medicare reimbursement. In order to expand appropriate outpatient rehabilitation services, it would be important to modify Medicare, Medicaid, and other third party payors to include alternative settings for these services.

On a trial basis, the expansion of services could take the form of waivers for individual pilot projects. These projects should have mechanisms for data collection and evaluation in order to assess cost-effectiveness and patient care outcomes. As documentation is developed, appropriate modifications in Medicare, Medicaid, and other third party payors should be made.

Continuity

Manpower availability for rehabilitation team staffing is an important issue due to shortages of qualified personnel, particularly physiatrists. The availability of therapists, rehabilitation counselors, and nurse specialists in rural areas also is greatly limited. The extent to which the team approach is used and how functional these teams may be in the treatment of the rehabilitation patient is unknown at this time. Information is available that all the hospitals with rehabilitation units offer physical therapy, occupational therapy, and speech pathology. At a minimum, these disciplines are available to patients who have access to these facilities. The adequacy of referral patterns and counseling services which would lend continuity to a patient's care is also unknown at this time. cursory analysis suggests that it is doubtful whether all patients receive adequate case management and follow-up after discharge from facilities.

Problem Description

Availability

The need for physiatrists is the most clearly documented need at this writing. Future editions of the State Health Plan will utilize data from Health Systems Plans and other inputs including appropriateness review to examine the regional adequacy of rehabilitation units.

Accessibility

Barriers to the receipt of needed rehabilitation must be lifted. As discussed under Cost, there are defined barriers for reimbursement of services provided in alternative settings. This problem is a lingering one even though it is evident that the receipt of care in alternative settings promotes a more productive population. An appropriate use of consumer-oriented outpatient rehabilitation causes less disruption to people's jobs and home lives in addition to a more efficient use of health care dollars.

Although new construction of health facilities tends to be more "barrier-free," the feasibility of altering architectural access barriers in established facilities is limited. Until a generation of older inaccessible buildings are replaced, the resolution of the problem may lie in home visitations or other types of special arrangements.

Acceptability

Education programs for families who care for infirmed relatives has been discussed under Maintenance (Section 3.7). Linkages might be developed between these programs and programs for families of disabled persons. Indeed, there are a large number of patients whose needs overlap both rehabilitation and maintenance services. For the rehabilitation patients, education should take place primarily within the setting of the rehabilitation unit. However, many of the general care skills would be the same for both the rehabilitation patient (often disabled), and the patient needing long-term maintenance care. In addition, the families of both types of patients would normally need similar services.

Quality

As stated previously, distinct hospital-based rehabilitation units should attempt to conform with JCAH standards. The current level of conformance of these units is not known.

Cost

The development of more consumer oriented alternatives to inpatient rehabilitation services will require multi-faceted strategies. A first step (taking into account present reimbursement barriers) would be to have hospitals with distinct rehabilitation units begin to explore the most feasible outpatient program of restorative care which they could offer, in addition to their inpatient rehabilitation. Most facilities should be able to determine which third party payors are most commonly utilized by their rehabilitation patients and what the reimbursement restrictions are for these payors. The results might range from limited outpatient therapy to a pilot day hospital program operated under a Medicare waiver. Lifting of reimbursement barriers has the greatest chance of success where cost-effectiveness of the alternative setting or program has been documented.

Continuity

Increasing the amount of professional education in the comprehensive needs of the rehabilitation patients and in the dynamics of the team approach would enhance the delivery and the continuity of restorative care to the rehabilitation patient.

Goals, Objectives, and Actions

GOAL: TO ENSURE THAT ALL PATIENTS WHO NEED REHABILITATION CARE RECEIVE THE FULL RANGE OF QUALITY RESTORATIVE CARE IN THE MOST COST-EFFECTIVE SETTING CONSISTENT WITH THEIR NEEDS.

OBJECTIVE 1: To encourage the training and recruitment of Physical Medicine and Rehabilitation Services personnel.

Recommended Action 1: By 1983, at least one Physical Medicine and Rehabilitation Specialist should be placed in health service area V.

OBJECTIVE 2: By 1982, Medicare and Medicaid reimbursement barriers to outpatient rehabilitation services should be eliminated where it facilitates a more appropriate use of rehabilitation care dollars.

OBJECTIVE 3: By 1981, hospitals with distinct Physical Medicine/Rehabilitation units should work toward meeting the Joint Commission on Accreditation of Hospital Standards for the provision of care.

OBJECTIVE 4: By 1981, medical training centers in Missouri which prepare practitioners in restorative care should adequately define the total needs of the rehabilitation patients and should ensure the preparedness of graduates to effectively deliver care within the rehabilitation team concept.

II. HABILITATION OF DEVELOPMENTALLY DISABLED PERSONS

Introduction

Data on the numbers of developmentally disabled persons in Missouri, an analysis of their health status, and corresponding goals are given in the Health Status section (3.2).

The Missouri Department of Mental Health defines a developmental disability as "a disability attributable to mental retardation, cerebral palsy, epilepsy, autism, (or dyslexia resulting from these) or other conditions closely related to mental retardation in terms of intellectual and adaptive problems."⁹ The program for the developmentally disabled in Missouri is funded by the Developmentally Disabled Assistance and Bill of Rights Act (P.L. 94-103). Services in Missouri which are supported through formula grants under this act include: diagnosis, evaluation, treatment, personal care, day care, domiciliary care, special living arrangements, training education, sheltered employment, recreation, counseling, protective and other socio-legal services, information and referral, follow-along, and transportation.¹⁰

Desired System

Availability

The number two priority of the Department of Mental Health's Developmental Disabilities Plan is "to assist in and encourage the development, expansion, and improvement of community-based residential facilities for the developmentally disabled."¹¹ (The availability of placements at differing levels of care in facilities with an appropriate patient mix is an important component of the treatment environment.)

Quality

Developmentally disabled persons should be housed in the least restrictive environments which are appropriate to their needs. Clients in placements should be well monitored and should have continued medical and social supervision. The quality of facilities also should be ensured.

Continuity

The continuity of the health care delivered to persons who have been deinstitutionalized is particularly important because the services which this population receives at the local level may be administered through a variety of public, not-for-profit and/or private programs.

Cost

The high cost of providing inpatient care has been cited as one impetus of the Department's deinstitutionalization program (the Community Placement Program). However, even at the community level, adequate funds must be available to provide adequate treatment. Counties where services

are lacking should attempt to implement "S.B. 40" funding. "S.B. 40" provides local support for community-based programs through a levy of up to 20 cents per \$100 assessed valuation subject to approval by county voters, for the establishment and/or maintenance of sheltered employment, group homes, or related programs.¹²

Accessibility*

Acceptability*

Comparative Analysis

Availability

In the Department of Mental Health's Developmental Disabilities Plan "Residential Facilities" are of two categories, Domiciliary and Special Living Arrangements. Domiciliary care is needed for those who require the provision of living quarters, personal care, and supervision on a 24 hour-a-day basis. Such care might be given in nursing homes, foster homes, or other residential facilities. Special living arrangements are needed for those who require some degree of supervision. These arrangements include at least counseling and leisure time activities, but residents may leave the place of residence for work, recreation, or other reasons. In addition, the residents are usually not heavily dependent upon personal care services. Some examples of this form of care are respite services for parents and supervised apartment living.¹³

The term "service gap" has been used by the Department of Mental Health to refer to numbers of persons who are determined to be in need of such services and are either not getting this care or are not getting maximum benefit from the residential care they receive because there are problems of appropriateness with the placement. These numbers do not really represent known individual cases but are service gap "indicators" or "bench marks" of estimated needs to be used in planning.¹⁴ Based on a statewide planning study, the Department of Mental Health has determined that there is a service gap of 44,641 clients for domiciliary care and a service gap of 31,104 clients for special living arrangements.

Quality

The Department of Mental Health conducts the Community Placement Program "to provide mental health treatment and services in the least restrictive environment consistent with the individual clients needs." As a result of this program, Missouri has seen a distinct shift from the institutionalization of the majority of patients in state facilities to housing these patients in private and public facilities. However, a number of issues have come to light in regard to the community placement program.

Central to all these issues is the problem of quality control. The problems of placement of clients in substandard facilities and of inadequate client management have received increased public attention.

Continuity

Case management services include counseling, protective, social, socio-legal, and following-along services which are important in the continuity of care. The availability of these services is only one component in the measure of continuity of care. As estimated in the Department of Mental Health plan, the total statewide services gap for case-management services is 198,504 clients.¹⁵

Cost

It is estimated that the Community Placement Program has saved the state considerable amounts of money on capital improvement projects and has secured federal funds not normally available to Missouri. State government has been relieved of much of the financial burden of caring for the mentally ill and developmentally disabled as a result of the federal monies.

Accessibility*

Acceptability*

Problem Description

Availability

Developmentally disabled persons of differing diagnoses have differing residential needs. Furthermore, services availability depends on whether a family can meet residential needs. For some individuals, care is beyond the capability of their families and for some adult patients, relatives may no longer be alive. There is a need for additional and more appropriate facilities.

Quality

The utilization of inappropriate and poor quality facilities by the Department of Mental Health has raised the question of whether or not effective evaluation and treatment of placements is possible. The numbers of community placements in facilities from which state authorities sought to revoke licenses in 1978 and the difficulties in relocating these patients has led to questions concerning the total "manageability" of the Community Placement Program.

Continuity

More services of a case-management nature must be purchased for the population in need. The service gap indicator points to insufficient services obtained by the majority of the estimated 252,000 developmentally disabled persons in Missouri.¹⁶

Cost

The extent of the inappropriate use of mental health dollars is a matter of conjecture. It is hoped that in the future more thorough planning and more attention to efficient management principles will help to put mental health dollars where they can meet the needs with cost effectiveness and quality.

Accessibility*

Goals, Objectives, and Actions

GOAL: TO ENSURE THE DEVELOPMENT OF A SYSTEM FOR APPROPRIATE PLACEMENT IN RESIDENTIAL FACILITIES WHERE POSITIVE BENEFIT CAN BE RECEIVED.

OBJECTIVE 1: By 1984, quality housing should be made available which meets the needs of the differing degrees of disability among the population of developmentally disabled persons in Missouri.

Recommended Action 1: By 1984, the service gap for residential care should be reduced by 10 percent.

Recommended Action 2: In areas that are underserved, local housing authorities, county governments, and the Department of Mental Health should explore avenues for providing residential care to developmentally disabled persons.

OBJECTIVE 2: By 1984, the service gap for the provision of case-management services for the developmentally disabled should be reduced by 10 percent.

2. Treatment Services

Desired System

Availability/Accessibility

Sophisticated medical treatment and general health care monitoring are often necessary in the treatment of the developmentally disabled patient. This may involve periodic medical and neuro-psychiatric evaluations with sophisticated laboratory monitoring.¹⁷ The availability of these highly technical services is presently an issue in rural Missouri. Dental care and therapy services may also be difficult to obtain for the developmentally disabled person.¹⁸

It is desirable that specialized programs of identification, referral, and care are available and accessible to the developmentally disabled population in Missouri to ensure proper care and placement. The availability of specialized dental consultation services and inpatient dental surgery should be improved. The use of innovative delivery systems (i.e., mobile units) should be explored. The provision of comprehensive care and management for the non-ambulatory patient, while particularly difficult to accomplish, should also be ensured.¹⁹

Continuity

See under Residential Care

Quality

See under Residential Care

Cost

See under Residential Care

Acceptability*

Comparative Analysis

Availability/Acceptability

The Department of Mental Health Developmental Disabilities Plan states that in the provision of medical services, there is a service gap of 151,730 clients; in the provision of dental services, there is a service gap of 163,231 clients, and that in the provision of occupational

therapy, physical therapy, and speech pathology and other therapy services, there is a service gap of 151,730 clients.²⁰ As discussed earlier, these service gap figures are planning estimates.

According to the Department of Mental Health plan:

"In both rural and urban areas, developmentally disabled persons and their families continue to experience difficulties in obtaining dental services. Essentially, they are able to receive little other than crises care . . . Other treatment services (including medical services, therapies, etc.) are also needed statewide. Especially these services are needed on a regular basis for the purpose of ameliorating the extent of handicapped conditions. Specialized services are especially difficult to obtain by those living in rural areas."²¹

Continuity

See under Residential Care

Quality

See under Residential Care

Cost

See under Residential Care

Acceptability*

Problem Description

Availability/Acceptability

Misdiagnosis of disability (due to a lack of specialized programs for identification of the correct mental health problem), may result in a person not receiving needed care, someone being shifted from one inappropriate program to another, or an erroneous placement in an adult psychiatric unit.²² The gravity of such misdiagnosis reinforces the need for proper medical evaluation of a person's disability and for development of a plan of care.

Continuity

See under Residential Care

Quality

See under Residential Care

Cost

See under Residential Care

Acceptability*Goals, Objectives, and Actions

GOAL: BY 1984, EACH TREATMENT SERVICE GAP SHOULD BE REDUCED BY A
MINIMUM OF 10 PERCENT.

OBJECTIVE 1: By 1984, special attention should be given to non-ambulatory patients in meeting the above goal.

III. THERAPY SERVICES

Introduction

The focus of this section is on three types of therapies: physical therapy, occupational therapy, and speech therapy. Physical therapy is prescribed for treatment of bodily ailments through essentially physical or non-chemical means including heat, water massage, or electric current. It functions to relieve pain and/or improve muscular function.²³ Occupational therapy is prescribed for the rehabilitation of persons through the development of useful skills or hobbies in sick or handicapped individuals. This type of therapy attempts to meet the patient's need to be occupied and stimulated. It also allows them to move toward self-reliance. This type of therapy can be particularly important for those who have become disabled through rheumatoid arthritis, paralyzing cardiovascular disease, or by the loss of limbs, sight, or hearing.²⁴ Speech therapy is prescribed for the correction of speech and language disorders through the use of special techniques.²⁵ While this section deals specifically with therapy services and their availability, these services are also addressed as a part of the restorative and habilitation care systems found in the first two parts of this section. Section 3.7, Maintenance Services, includes a discussion of therapy services.

Desired System

Availability

The availability of therapy services in the hospital setting will not be expanded beyond the analysis found in Part I - Physical Medicine and Rehabilitation. Based upon that analysis, it is desired that large hospital facilities should provide at least physical therapy services. The major focus of this section will be on the desirability of making these therapy services available in settings other than the hospital. Specifically, availability of physical therapy, speech therapy, and occupational therapy in nursing homes and in the patient's homes will be examined. It is desirable that patients should be able to obtain these services in nursing homes in their geographic area and from local health agencies.

Accessibility

Reimbursement barriers to the receipt of physical, occupation, or speech therapy services in a nursing home or at home should be eliminated. The Medicaid patient, in particular, should be able to receive needed therapy in the least restrictive environment which is appropriate to his/her needs.

Cost

It is not feasible for all nursing homes to staff and equip themselves to provide a full range of therapies. Under Medicaid, the certified facility must ensure that restorative care is rendered as ordered by the physician.

Therefore, certified facilities either must be equipped to provide such care or can make it available. It is desirable that they do whatever is more cost-effective and more feasible given the patient population. Facilities which care for private-pay patients should be able to provide the restorative care that is ordered for patient rehabilitation. Individual facilities are urged to examine cost-effective avenues to provide as full a range of services as feasible.

A parallel can be drawn to the home health agencies. Agencies should determine the feasibility of establishing a range of necessary services. Agencies are encouraged to examine the cost-effectiveness of contractual arrangements.

Quality

See Section 3.7, Part I - Chronic Disease Care and Part II - Nursing Homes for a discussion of quality in home care and nursing home care.

Continuity*

Acceptability*

Comparative Analysis

Availability

Most of the larger hospital facilities do make physical therapy available. The following estimates of the percentage of professional and practical nursing homes in each HSA which offer physical therapy, occupational therapy, and speech therapy are determined by the presence of therapy staff.

<u>Physical Therapy</u>			<u>Occupational Therapy</u>			<u>Speech Therapy</u>		
HSA I	-	35%	HSA I	-	34%	HSA I	-	34%
HSA II	-	36%	HSA II	-	16%	HSA II	-	19%
HSA III	-	53%	HSA III	-	30%	HSA III	-	22%
HSA IV	-	48%	HSA IV	-	23%	HSA IV	-	19%
HSA V	-	35%	HSA V	-	26%	HSA V	-	28%

It is important to note, however, that these numbers may be low if some facilities were not included because they have no resident therapy staff even though they make a service available.

In the area of home health, of the 114 counties in Missouri:

- 26 counties have no home physical therapy from a certified home health agency;
- 59 counties have no home occupational therapy from a certified home health agency;
- 62 counties have no speech therapy from a certified home health agency.

Map 1 found in the appendix under Section 3.7, Maintenance Services, illustrates home therapy availability in each county. When compared to equivalent data in the 1978 State Health Plan, more overall counties are served with in-home physical and occupational therapy although some individual counties have lost those services. For speech therapy, a number of counties no longer have that service available to them and, overall, there has been a slight decrease in the number of counties served.

Accessibility

The issues related to the shortage of Medicaid nursing home beds are relevant here. Additionally, the reader is advised to see Part II - Nursing Homes in Section 3.7.

In the home setting, health services are more accessible for the Medicaid patient who is eligible to receive Medicare because Medicare provides for a broader range of services. Medicaid does not reimburse for therapy delivered in the home at present. For the Medicaid patient who is under 65 and who needs this type of care, limitations in reimbursement would increase the probability of placement in a "reimbursable" institution. To allow for the most cost-effective use of the rehabilitation care dollar, there should not be incentives for inpatient care and corresponding reimbursement barriers to home care. An expansion of Medicaid reimbursement to cover home therapy programs would help to correct the problem.

Cost

Data is not available on the utilization of therapy services in nursing homes in Missouri. The belief that patients do not receive enough therapy for maximum benefit has long been held. It also has been speculated that purchased therapy equipment is sometimes not sufficiently utilized to be cost-effective.

Staffing through contractual arrangements has been successful in home health agencies. It is often a good vehicle to meet staffing needs cost effectively and in a way that efficiently utilizes manpower resources.

Quality

See Section 3.7, Part I - Chronic Disease Care, and Part V - Nursing Homes for a discussion of quality in home care and nursing home care.

Continuity*Acceptability*Problem DescriptionAvailability

A large percentage of nursing homes which do offer therapy services are professional homes. In rural Missouri, the lessened availability of therapy services correlates with a larger proportion of homes providing more custodial care and also with manpower problems. Manpower resources which are limited in some areas could be pooled locally so that therapy services could be available in all settings including hospitals, nursing homes, and patient's homes.

Accessibility

See Section 3.7, Part II - Nursing Homes for a discussion on Accessibility issues as they relate to nursing homes.

To allow accessibility to therapy in the patient's home, initiatives to expand Medicaid's scope of services in the home should be examined. The present inaccessibility is one of a myriad of reasons for the degree of inappropriate institutionalization which is believed to occur in Missouri. Of particular importance would be reimbursement for physical therapy.

Cost

As services are expanded to meet area needs, attention should be paid to their maximum utilization by the patient population and to the most efficient means of making the services available. Local nursing homes and home health agencies should explore sharing professional therapists to their mutual benefit.

Quality

See Section 3.7, Part I - Chronic Disease Care, and Part II - Nursing Homes for a discussion of quality issues as they relate to home care and nursing home care.

Continuity*Acceptability*Goals, Objectives, and Actions

GOAL: BY 1984, THE OVERALL AVAILABILITY OF THERAPY SERVICES IN THE PATIENT'S HOME AND IN THE NURSING HOME SETTING SHOULD BE INCREASED BY 25 PERCENT IN ORDER THAT MORE PATIENTS MAY BENEFIT FROM THERAPY SERVICES OUTSIDE THE HOSPITAL SETTING.

OBJECTIVE 1: By 1984, the percentage of nursing homes providing physical therapy should be at least 45 percent in all health service areas.

OBJECTIVE 2: By 1984, the percentage of nursing homes providing occupational therapy should be at least 30 percent in all health service areas.

OBJECTIVE 3: By 1984, the percentage of nursing homes providing speech therapy should be at least 30 percent in all health service areas.

OBJECTIVE 4: By 1984, the number of certified home health agencies offering home therapy care should increase their service capacity in order to reduce the number of unserved counties by 50 percent.

OBJECTIVE 5: By 1981, Medicaid should reimburse home services for physical therapy.

OBJECTIVE 6: By 1983, Medicaid should reimburse home services for occupational therapy and speech therapy.

ENDNOTES

¹Area II Health Systems Agency, 1978 Health Systems Plan (Moberly, Missouri, 1978).

²Allen Chase, The Biological Imperatives: Health, Politics, and Human Survival, Holt Rinehart and Winston, (1971, New York) pps. 125-126.

³Mid-America Health Systems Agency, 1979 Draft Health Systems Plan (Kansas City, 1979) p. 9 (of Rehabilitation Services).

⁴Mount Saint Rose Hospital, "The Need to Fund Day Hospital Programs for the Elderly," (St. Louis, 1978), p. 3.

⁵Leonard Policoff, M.D., "Rehabilitation Medicine Revisited," Archives of Physical Medicine and Rehabilitation, Vol. 54, No. 1 (January, 1973), p. 3.

⁶Mid-America Health Systems Agency, op.cit., p. 12.

⁷Mid-America Health Systems Agency, op.cit., p. 4.

⁸Mount Saint Rose Hospital, op.cit., p. 6.

⁹Missouri Department of Mental Health, Missouri State Plan for Developmental Disabilities Services and Facilities Construction Program for Fiscal Year 1978, (Jefferson City, 1978), p. 2.

¹⁰Ibid., p. 2.

¹¹Ibid., p. 31.

¹²Ibid., p. 324.

¹³Ibid., p. 72.

¹⁴Ibid., p. 20.

¹⁵Ibid., p. 22.

¹⁶Ibid., p. 22.

¹⁷Ibid., p. 39.

¹⁸Ibid., p. 89.

¹⁹Ibid., p. 42.

²⁰Ibid., pps. 22-23.

²¹Ibid., p. 90.

²²Ibid., p. 41.

²³Benjamin Miller and Clare Brackman Keane, Encyclopedia and Dictionary of Medicine and Nursing, (W.B. Saunders, 1972), p. 738.

²⁴Ibid., p. 670.

²⁵Ibid., p. 975.

SECTION 3.7
MAINTENANCE SERVICES

INTRODUCTION
CHRONIC DISEASE CARE
LONG TERM INSTITUTIONAL CARE
DAY CARE

Introduction

The emphasis of this chapter is on the chronically ill patient. For these patients, the goal is to offset the deterioration of the patient's condition and to strive to maintain the patient's optimum functioning level.

I. CHRONIC DISEASE CARE

In this section, the focus will be on the availability of in-home nursing care and hospital based long term care. (In-home therapy services is discussed in 3.6 under Habilitation/Rehabilitation Services.) Part II will focus on nursing home care and Part III will discuss day care.

A. In-Home Health Services

Desired System

Availability

In Missouri, there should be in-home health services available in each county. Assessment teams should also be available by county to determine what package of health or support services is needed and to make arrangements for the impaired indigent elderly in particular who are at high risk of institutionalization. These service packages might include: homemaker/home health aide services, nutrition services, and transportation as well as skilled nursing and home therapy services. In any given area, if all these services are even available, they are usually administered by different agencies. Information and referral to services is available through Area Agencies on Aging, but presently no agency assures the delivery of an appropriate level of care to each client through a comprehensive health and social needs assessment process. A designated professional would follow up on the client in a case-manager role.

Accessibility

Reimbursement barriers should be lifted in order to promote the use of home health services.

Acceptability

Family education and support services should be developed in Missouri since families are the major source of care for the infirmed elderly. The education program could teach family members basic care skills and provide assistance as needed. There are very few programs similar to this currently available. The development of networks of "back-up" services to provide support to families caring for aged relatives would be an important aid in promoting appropriate home care. An important support service would include the provision of advice and assistance in case of an emergency; ideally on a 24-hour basis. It is tremendously reassuring to families caring for infirmed relatives to know that, in a crisis, help is available.¹ Arrangements for respite care could also be made through this service.

Physician and hospital acceptance of home health services can be promoted by enhancing the knowledge of these two sectors in relation to the appropriate use of home health care. Fundamental issues in home care that hospitals and physicians should be aware of are: a) how home health services can be obtained for the patient; b) the sophistication of the care that can be provided by these services; c) the categories of patients who can best be served in the home setting; and d) methods of reimbursement.

Quality

Licensing is needed as a means of helping to protect consumers against inadequate quality home health services.

Cost

Home health agencies should be included under Certificate of Need legislation. The National Association of Home Health Agencies supports the inclusion of home health under Certificate of Need legislation and in the planning process as a means of deterring "undue proliferation of agencies in some areas while helping to promote the extension of home health to unserved areas. Licensure without . . . Certificate of Need legislation could cause proliferation of unneeded agencies and duplication of services."²

In a more general term, it is also desirable that the promotion of in-home services be continually emphasized. Their appropriate use should prevent undue institutionalization, at greater cost. A recent GAO report has shown home health services to be less costly than institutionalization for patients who are not greatly impaired.

Closer attention should be given to the appropriate utilization of both home health personnel and home health visits. The use of home health aides for the performance of tasks which do not require the skills of a professional nurse should be emphasized. Quality and adequate care must be safeguarded; however, close scrutiny should be maintained in order to ensure that the care delivered is not more intensive than the patient's condition would warrant. As physicians and home health agencies develop and administer each patient's "plan of care," the appropriate intensity of services should be carefully addressed.

Continuity

See discussion of case management under Availability.

Comparative Analysis

Availability

Map 1 in the appendix under 3.7 indicates certified home health care service availability in the state. A discussion of in-home therapy services is found in Section 3.6, Habilitation/Rehabilitation. At present, of the 114 counties in Missouri:

- all counties have Medicare/Medicaid certified skilled home nursing care;
- two counties have no certified home health aide services;
- seventy-seven counties have no certified medical social services.

The map also reveals the availability of Division of Family Services adult caseworkers. Sixty-nine counties have neither an adult caseworker from the State Division of Family Services nor medical social services from a certified home health agency. It is worth noting that when comparisons are made with the availability reported in last year's State Health Plan, Missouri's home health coverage has improved. While it had been reported that there were eight counties with no home health services at all last year, there are no counties, at present, without at least nursing services and additional services.

Programs of case management for the infirmed home patient are not in operation in Missouri. In Kansas City a program has been proposed which would demonstrate a case management system through a health care facility. It would provide assessment, service planning, services delivery, follow-up, and community development.³

A model home health services program entitled, "Nursing Home Without Walls Program" was authorized by the New York legislature in 1977. Under this program, payment of 75 percent of the average monthly skilled nursing facility or intermediate care facility rate is provided for each client who is determined needing skilled or intermediate care. This provides for the allocation of home services to meet client needs. Providers may be certified home health agencies, public, voluntary, or non-profit residential care facilities or other health care facilities. Services may be provided directly or by contract with other agencies. There must be physician approval of the plan of care and the local Department of Social Services (equivalent to the Missouri Division of Family Services) does the case-management in cooperation with the long term care providers. With some modification to improve its feasibility in Missouri, such a program could warrant experimentation in the form of demonstration projects.⁴

Accessibility

Currently, the Blue Cross Plans in Missouri and other insurance companies are providing reimbursement for home health services. Information on the coverage of home health by all insurance companies is not available. Impact on accessibility can be made by improving the reimbursement under the Medicaid program. Home services are more accessible for the Medicaid patient who is covered by Medicare because Medicare provides a broader range of services and for a greater number of visits than Medicaid. For the Medicaid patient who is under 65 and needs home services, reimbursement limitations might result in placement at greater cost in an institution covered by Medicaid reimbursement. Under Medicare Part A, 100 visits are allowed within one year following hospitalization; Part B allows for an additional 100 visits regardless of hospitalization within a calendar year after a \$60 deductible is paid. Under Medicaid, home health nursing visits are limited to 24 visits within a ninety day period. Since it is most likely that the more intensive care will be during the first ninety days following a disability or infirmity, it follows that although some patients may not approach 100 visits within a year, they may need more than 24 visits within the first ninety days. Reimbursement policy is a definite barrier to the utilization of home health care and tends to promote the use of institutional care.

Acceptability

As stated earlier, although education programs for those caring for aged relatives are beginning to emerge, there really are no "back-up" services available for families caring for aged relatives. The closest existing example in other states of what would be desirable are the back-up services associated with hospice programs which include home programs for terminally ill patients.⁵ Staff (or volunteers) would be needed to answer the telephone, and contracts could be made for nursing services to be on call for night emergencies.

Quality

In Missouri, there are no minimum standards that all providers of home health care must meet in spite of the fact that home health agencies provide such services as: removing stitches, changing dressings, drawing blood, starting IV's, and irrigating catheters. Most non-profit home health agencies, as a result of participating in Medicare, must conform to Federal standards. Member agencies in the Blue Cross Programs must also meet certain standards. However, there are no statewide standards that all agencies must meet regardless of their participation in Medicare or Blue Cross. Licensure would help improve quality control and promote more adequate monitoring of the care home health agencies are providing.

Cost

There is presently no Certificate of Need legislation in Missouri. However, documentation of the cost-effectiveness of home health care in Missouri is becoming available. A fairly extensive study indicating a "long standing need" in the area of in-home services was conducted in rural mid-Missouri. Data was gathered from interviews with the relatives of clients or persons close to clients of a newly established home health service. The study concluded that "more than 80 percent of the persons receiving home care services were in need of this type of assistance for some time before the service began." If the home service had not been available, 15 percent of the clients reported that their "entry into a nursing home would have been inevitable. . . ." The findings further indicated that the services did: "1) prevent premature entry into a nursing home for a certain sub-group of the elderly; 2) avoid unsafe, unhealthy living situations for others; and 3) supplement family care where relatives continue to give care and assistance."⁶

The Missouri Council for Homemaker Services conducted a survey of all Missouri hospital social services departments in November, 1978. Thirty-four hospitals responded with twenty-four hospitals completing the entire questionnaire. From among the respondents, 130,820 discharges were represented. Of these, according to these hospitals, 3,769 patients were placed in nursing homes through state reimbursement. According to the judgment of these hospital staffs, approximately 1,134 of the patients could have gone home had there been "up to 20 hours of homemaker services each week (used with or without home health visits)" available to them.⁷

Continuity

See discussion of case-management under Availability.

Problem Description

Availability

The issue of need in the area of home health is often more complex than whether each county is in the service area of a home health agency. At issue is whether or not the existing agency has the capacity to fully serve all the area with the necessary complement of services. If determination of need is based on sound criteria, there is less of a political issue when an agency attempts to establish additional services within the turf of existing agencies, or when an agency wants to establish services which are not needed by the community. Methodology development is presently going on in our state and elsewhere and the "state of the art" is gradually becoming more advanced. Current information on need determination has been published by the National League for Nursing. The League has listed the following as basic and essential

services for a home health agency: home health nursing, nutrition, occupational and physical therapy, speech pathology services, and social work. The League offers the following guidelines for data needed to develop criteria:

Population Characteristics - for both community and catchment areas (each of the following should be related to known morbidity rates):

- Age
- Income level
- Ethnicity (including language)
- Usual living arrangements
- Education
- General survey of industry in area
- Employment status and reasons (e.g., temporary industry layoff)
- Infant mortality
- Resources for reimbursement

Provider Profiles

Institutional health facilities (hospitals, skilled nursing facilities, intermediate care facilities, domiciliary, and boarding homes) for both community and catchment areas.

- Number of beds by type of service (e.g., medical-surgical)
- Number of admissions
- Number of discharges
- Services being provided

Non-institutional health facilities (e.g., HMOs, home health agencies, rehabilitation centers, etc.) - for both community and catchment areas.

- Services being provided
- Composition of case load being served

Other Providers - for both community and catchment area.

- Number of physicians by applicable specialty
- Number of surgeons by specialty
- Number of other appropriate providers (e.g., therapists, dietitians, dentists)

Client Assessment

- Levels of care provided in community
- Ratio of visits per patient by discipline
- Ratio of visits per patient diagnosis
- Outcome measures

The criteria must speak to: the number of patients to be served with and without prior hospitalization; projections of the population mix five years hence; projections of the impact of new health care providers

and/or facilities (surgicenters, HMOs, etc.) five years hence; the provision of service to rural areas and/or to traditionally underserved population segments; and an evaluation to determine when need can be met by additional services and when need should be met by an additional agency.⁸

There is great need for development of social work services for the aged to assist in placement at the appropriate level of care, whether at home with the assistance of an appropriate package of services or in a Medicaid nursing home bed. However, reimbursement is often complicated, and "plugging-in" to the right services is often difficult when the consumer is obstructed from receiving services by long waiting lists. Inappropriate placements may be made that place patients in too high a level of care or where they do not receive needed services.

Accessibility

As previously stated, Medicaid reimburses for up to 24 home health visits per 90 day period. It is recommended that this coverage be changed to 100 visits per year with no quarterly distribution, comparable to Medicare. Technically, this would mean the addition of only four visits per year under the scope of services; however, to the clientele, it would mean the availability of more visits when most needed.

A second issue is accessibility to the physician's office which is a serious problem for many home care patients. For these patients, travel to the physician's office for periodic diagnostic and/or treatment services is hampered by their impairment. Many home care patients are essentially homebound; in fact, this is the basis for the eligibility requirement for Medicare reimbursement of home health services. In many cases, office visits require the assistance of family members to escort (perhaps carry) the patient to the physician's office. On the other hand, most physicians do not make house calls and believe that it is best for a patient to receive services at the office where the medical apparatus is available to provide the most thorough care. Furthermore, the travel involved would, in many instances, place severe constraints on a physician's time. Such factors make this dilemma difficult to resolve for the impaired home bound patient. However, for the patient who must do without such care because accessibility is too much of a barrier, a means of home delivery of such care must be found.

One possible solution is to define a broader role for the nurse clinician (nurse practitioner) beyond that currently assigned to the visiting nurse so that this practitioner can serve as an extension of the physician and meet health care needs in the patient's home beyond what the visiting nurse can presently meet. This is an area which will require more attention in future editions of the State Health Plan. The issue of reimbursement for the nurse clinician also must be raised; at present, there is no mechanism for reimbursement for the delivery of this level of skill in a patient's home.

Quality/Cost

The enactment of a home health licensure law would allow proprietary home health agencies to be reimbursed through Medicare and Medicaid. Along with licensure, the inclusion of home health agencies under Certificate of Need legislation is necessary to allow for the planned growth of services.

Continuity

See under Availability for a discussion of case management.

Goals, Objectives, and Actions

GOAL: TO PROMOTE THE APPROPRIATE USE OF IN-HOME SERVICES BY IMPROVING THE AVAILABILITY, ACCESSIBILITY, AND QUALITY OF THESE SERVICES, AND TO ASSIST CONSUMERS IN OBTAINING THE APPROPRIATE PACKAGE OF SERVICES NEEDED TO MAINTAIN THEIR INDEPENDENCE.

OBJECTIVE 1: By 1983, all counties in Missouri shall be served by a certified home health agency for home health aide visits.

OBJECTIVE 2: By 1980, a methodology for determining long term care need as it pertains to home health care will be developed and included in the State Health Plan.

OBJECTIVE 3: By 1982, social work services in rural Missouri should be available within a 45 minute driving time.

Recommended Action 1: The Division of Family Services should obtain funding for more adult caseworkers so that a minimum of 25 percent more counties can be served.

Recommended Action 2: By 1982, a rural and an urban demonstration project should be undertaken in Missouri which would provide model case management services for in-home long term care patients.

OBJECTIVE 4: By 1982, the number of home health visits under Medicaid should be consistent with the number of visits under Medicare, Part B but not less than 100 visits per year.

OBJECTIVE 5: By 1981, voluntary and/or religious organizations, teaching institutions, home health agencies, health care institutions, and the Missouri Office of Aging should consider offering educational programs and other supporting services to families caring for infirmed aged relatives.

OBJECTIVE 6: By 1980, Certificate of Need legislation which includes home health services under its regulation and a licensure law should be enacted to regulate home health agencies.

B. Hospital-Based Long Term Care

Desired System

Availability

In Missouri, long term care can also be hospital-based or in convalescent centers associated with hospitals.

"By locating such long term convalescent hospitals adjacent to their parent hospitals or medical centers, the full spectrum of the medical and paramedical resources of the acute care hospitals would be available to the convalescent patients if needed for emergencies. Staff doctors, and in some hospitals, residents and interns, would always be on hand . . . Many of the resources of the parent acute care hospital would be shared with the convalescent facilities."⁹

For the patient who is so extremely impaired that home care is not feasible and no other alternative exists except placement in an acute care facility then hospital-based or convalescent center long term care beds are particularly desirable. Because of their conditions, these patients often need multiple services (close nursing supervision, medical treatment, and therapies).

Cost

Even though care received in hospital-based long term care beds may be more expensive than nursing home care, it is potentially less expensive if the patient's needs are closer to the acute facility level of care. The desirability of hospital-based long term care for patients who could receive appropriate care in a nursing home from a cost-effectiveness standpoint has not been the subject of research to date and should be examined in future editions of the State Health Plan.

Quality

In 1978, it was made public that a licensed long term care hospital was delivering care of such poor quality that it equalled that of some nursing homes which had been forced to close. Even though this hospital is now closed, the incident serves as a reminder that hospital-based long term care must be scrutinized for quality as carefully as the licensed nursing home. Both nursing homes and their hospital-based equivalents should be subject to at least the same quality standards.

Accessibility*

Acceptability*Continuity*Comparative AnalysisAvailability

Data from the Division of Health, Bureau of Hospital Licensure and Certification indicates that in Missouri there are:

296 hospital based skilled nursing facility beds;
272 beds broadly labeled as "long term care" located in hospitals;
and
626 hospital-based intermediate care beds.

Occupancy rates range from 100 percent to 36.6 percent. The level of care ranges from Medicare reimbursed treatment of patients needing a high degree of nursing care and therapeutic services to inadequate custodial care. A large portion of the affected patient population are Department of Mental Health placements in non-conforming hospital beds.

Cost

A detailed analysis of the cost-effectiveness of both hospital based and convalescent long term care will be forthcoming in future editions.

Quality

There are perceived problems with ensuring the quality of hospital and convalescent based long term care beds. Further details will be provided in future editions of the State Health Plan.

Accessibility*Acceptability*Continuity*

Problem Description

Availability

It is often difficult for the seriously infirmed and the sometimes long term convalescent patient to find a facility which provides care at the appropriate level. Very few nursing homes which offer a sufficiently high level of care are Medicare certified. Many of the long term care beds which are hospital based answer that need.

Cost

If care is being given at these hospital based facilities which could be given at conventional nursing homes in the area, and if that hospital-based care is more expensive, then the continued use of these beds may represent a misuse of health care dollars. Criteria for making cost effective decisions in this area should be addressed in future editions of the State Health Plan as data become available and appropriateness review is begun.

Quality

It is hard to apply quality standards to these long term care beds because they are not conventional hospital beds and do not come under nursing home licensure. Nursing home reform legislation, which was passed by the General Assembly in 1979 will include these beds under new and more stringent regulations.

Goals, Objectives, and Actions

GOAL: TO PROMOTE THE APPROPRIATE AND COST-EFFECTIVE USE OF HOSPITAL-BASED LONG TERM CARE BEDS.

OBJECTIVE 1: By 1981, necessary data should be gathered and reviewed to determine the appropriateness of the delivery of services in this setting for the highly infirmed convalescing patient, the extremely impaired chronic disease patient, and the custodial (intermediate care facility) patient.

OBJECTIVE 2: By 1981, improved and enforced facility control measures should be in place to regulate hospital-based long term care beds.

II. LONG TERM INSTITUTIONAL CARE

Introduction

A number of factors determine the need and demand for long term care including: incidence of illness, ability to pay, socio-economic status, service area population, and the presence or absence of alternatives to institutionalization. To arrive at an understanding of how factors such as these combine to produce a need for services is a highly complex undertaking given the current trends in data and analyses. There is, however, sufficient information to develop the basic characteristics of a desired long-term institutional care system.

Desired System

Major consideration should be given to the following characteristics as a fundamental base for development of the desired long term care system. These considerations should provide a framework upon which policies can be charted to satisfy Missouri's need for an appropriate long term care system.

Availability

Balance of need among the four levels of care - skilled, intermediate, personal, and alternative - should be based upon: a) an analysis of existing inpatient usage rates per bed; b) appropriate utilization; and c) a survey of community needs.

Accessibility

The location of facilities at each level of care should allow for easy access, based on travel time deemed reasonable by state/community standards, for physicians, staff, and families of residents. Furthermore, an adequate number of Medicare and Medicaid certified beds should be accessible for care from a reimbursement standpoint.

Continuity

The desired nursing home system should minimize patient dependency and should be designed to enable the patient to move from an intensive care status to alternative living situations which maximize the individual's potential for functioning independently. This requires an effective coordination of care for the chronically ill patient, assuring the appropriate movement of the patient between acute and long term care facilities and the patient's home.

Quality

The model personal nursing care system should be able to demonstrate the ability to provide quality patient care and services at all levels through past performance, accreditation, and licensure certification.

Cost

At each level of care in the model system, daily costs incurred by residents (as monitored by the Department of Social Services) should compare with the average daily costs found in their geographic area for facilities of comparable certification. Furthermore, the state reimbursement systems should foster cost-containment and yet be adequate for the provision of quality care.

Acceptability

In order to increase the acceptability of this type of health care to its patient population, the desired system should include a framework of residents' rights which are guaranteed by law. Acceptability would be promoted by simplifying the classification system of long term institutional care. This would increase consumer understanding, ease administration of reimbursement mechanisms, and would lend itself to better quality control by its inclusion of boarding homes.

Comparative Analysis

Availability

An indicator of the availability of nursing home beds is the ratio of nursing home beds per 1,000 population age 65 and over. Professional and practical licensed facilities in Missouri had a combined ratio of 54.1 beds per 1,000 in December, 1977, which closely approximates national figures of 53 beds per 1,000 population 65+ in 1973. The combined ratio of domiciliary beds and boarding home beds to 1,000 population over 65 was 9.9, which is nearly identical to the national figure of 10 beds per 1,000 population 65+. At the start of 1979, there were 489 nursing homes in Missouri containing 36,072 licensed beds. Definitions clarifying nursing home classification terminology is found in the appendix.

TABLE 3.7-1
NURSING HOME AVAILABILITY IN MISSOURI - NUMBER OF HOMES,
NUMBER OF BEDS, AND BEDS PER 1,000 PERSONS 65+; DECEMBER, 1977

	Number of Homes	Number of Beds	Beds Per 1,000 Persons 65+
Professional	139	16,407	26.8
Practical	293	16,740	27.3
Domiciliary	34	1,073	1.7
Exempt from Licensure	6	1,071	less than 1
Total Nursing Home Beds	472	35,291	57.6
Boarding Homes	351	5,019	8.2

Source: Unpublished data, Missouri State Center for Health Statistics.

TABLE 3.7-2
 MEDICAID BEDS IN MISSOURI BY CERTIFICATION
 DECEMBER, 1978

Skilled Nursing Facility (SNF) Beds	310
Intermediate Care Facility (ICF) Beds	10,787
SNF or ICF Beds	7,500

Source: Unpublished data, Missouri Division of Family Services.

Table 3.7-1 details the availability of different types of nursing home care in Missouri. Occupancy rates for 1977 indicate that the overall statewide occupancy rate for all facilities for the aged, both boarding and nursing homes, was 87.5 percent.

Accessibility

While an examination of the crude numbers of beds in Missouri would indicate that Missourians have an ample supply of nursing home beds, inaccessibility to these beds poses a barrier to placement. A lack of nursing home beds, in Missouri, which are certified for Medicaid and/or Medicare reimbursement creates problems in accessibility for the non-private-pay patient.

As of December, 1978, Missouri had 29.1 Medicaid beds per 1,000 population 65+. Missouri is low in the ratio of Medicaid beds. Just slightly more than half of our professional and practical beds per 1,000 population 65+ are Medicaid certified. For Medicare beds, latest data (1977) indicates that there are 2,071 beds or 3.3 Medicare beds per 1,000 population 65+. This is inadequately low.

An examination of the distribution of certified beds reveals that 27 counties do not have any certified beds. Map 2 in the appendix under 3.7 illustrates these counties. Furthermore, multi-county groupings indicate large geographic areas without certified beds. The map also indicates counties with a large percentage of aged residents; these are sometimes among or near the counties without Medicaid beds. However, what the map does not fully reveal are the areas where there are insufficient numbers of Medicaid beds to meet needs (as is the case in the City of St. Louis).

Continuity

The ability to provide for continuity of care for the long-term care patient is often hampered by the lack of services along a continuum of long term care. Specifically, a patient's ability to move from an intensive care status to a more custodial level of care and then to a

non-institutional setting is oftentimes obstructed. Difficulties arise from a lack of Medicare/Medicaid reimbursement, an inability to place a patient in the needed level of care, or a lack of social workers to assist in patient management. (Note the discussion of these issues under Parts A and D of this section).

Quality

In 1978, the State Senate Health Care Committee conducted hearings on the present nursing home and boarding home licensing in Missouri. The conclusions reached by this committee are as follows: "our present licensing system is ineffective. It permits abuse and neglect of our elderly. It puts more emphasis on physical structure than the dignity of human beings. Footdragging and legalisms block enforcement of standards."¹¹ A summary of inspection reports compiled in December, 1977, revealed that 122 of the more than 490 licensed nursing homes failed to pass inspection because there were "not approved" in at least one of the following basic areas: patient care, dietary, sanitation, and fire safety. These inspection failures were as diverse as an isolated problem in a generally conscientious home, to a serious violation in a home with repeated offences which had gone uncorrected over the past several inspections. Each of these homes, nevertheless, was re-issued its annual license.

Another important quality issue is the existence of so called "boot-leg" nursing homes. These may be: 1) boarding homes which illegally care for "bed ridden" patients; 2) facilities which are certified to house the Department of Mental Health's community placement patients, but also house additional "nursing home type patients" without obtaining a nursing home license; and 3) homes which are operating without any form of license at all. There is no acceptable data detailing to what extent this exists, but informed sources at the Division of Health identify these facilities as a serious problem.

Compliance with life safety codes represents another quality issue. The number of beds a facility has in 'conformance' with . . . , or beds listed as 'non-conforming' with life safety codes is completed by the Bureau of Health Facilities Planning and Construction. There are four parts of the inspection guidelines for conformance, each dealing with various types of criteria:

- Criteria in Part A deals with compliance with fire resistant building materials;
- Criteria in Part B deal with safety standards related to the structural, mechanical, and electrical aspects of the building as a whole;
- Criteria in Part C deal with bed capacity and evaluation of nursing units, including such things as: bed count for each room, dimensions of rooms, toilet areas, proper equipment for nursing care (e.g., nurses' call), and access to corridor;

- Criteria in Part D deal with the evaluation of service departments.

(From "Guidelines for Completing Long Term Care Facilities Plan Evaluation Forms".)

The Bureau of Health Facilities Planning and Construction reported in 1979 that there are 9,673 nursing home beds listed as 'non-conforming' for being in substantial non-conformance with at least one of Parts A-C. There are no nursing home beds in Missouri in non-conformance with Part D. At the time this assessment was done, non-conforming beds represented 9,673 beds out of a total 35,340 nursing home beds or 27 percent of the total. In some cases, all of a single facility's beds are 'non-conforming' while in other cases, there may only be a few beds. The breakdown for 'non-conforming' beds is as follows:

- 7,765 beds (22 percent) are in substantial non-conformance with Part A;
- 89 beds (.25 percent) are in substantial non-conformance with Part B;
- 1,819 beds (5 percent) are in substantial non-conformance with Part C.

These beds represent those in substantial non-conformance within duly licensed nursing homes. In Missouri, there still remains a problem of unlicensed facilities administering nursing care ("boot-leg homes"). The number of non-conforming beds outside the review of the Division of Health's regulation appear to be substantial.

Cost

Nursing home care costs are paid either by the private sector or by the state, and/or federal programs. These reimbursement programs may take the form of either the nursing home cash grant program of Medicaid or Medicare for skilled care and rehabilitation. As costs have increased, growing numbers of patients within the private sector have been unable to afford the expense of this type of care and are qualifying for Medicaid assistance; however, as discussed under Accessibility, a shortage of Medicaid beds exist. Missouri's Medicaid reimbursement mechanisms for nursing home care has been the focus of much attention this year. According to the report by the Senate Health Care Committee:

"Witnesses before both Senate and House committees indicated that the system has permitted financial manipulation by some operators who diverted funds from patient care, while at the same time failing to properly reward those offering good care. Missouri currently reimburses homes with an interim rate based on 'reasonable cost'. At the end of the cost period, a retrospective settlement is made on the basis of actual

costs incurred . . . This year the state is paying all homes only 60 percent of retroactive amounts because of a fund shortage. The state is now considering prospective or flat rate systems."¹²

Inappropriate placement at too high a level of care aggravates the problem of rising costs. As previously discussed, medically appropriate alternatives of lesser cost are not always available or accessible to the patient because of a lack of services or a lack of reimbursement by Medicare or Medicaid.

Acceptability

At present, the only nursing home residents for whom a bill of rights is mandated are those who reside in Medicare/Medicaid certified skilled nursing and intermediate care facilities where residents' rights are guaranteed by Federal regulations. Therefore, of the 489 nursing homes in Missouri, only 184 are legally responsible to observe resident's rights. Rights for quality care, expression of grievances, privacy, receipt of information about care, medications, and condition (if not medically contraindicated), and management of funds are just a few of the important areas where residents' rights must be protected and where such protection is not clearly statutorily in effect, at present. The Missouri Office of Aging has recently begun a Nursing Home Ombudsman Program which places community ombudsmen volunteers in nursing homes to serve as resident advocates. Hopefully, as this program grows, it will enhance the protection of resident's rights.

'Acceptability' also relates to the present method of classifying long term care facilities. At this time, Missouri licenses five 'types' of institutions: Professional I Nursing Homes, Professional II Nursing Homes, Practical Nursing Homes, Domiciliary Nursing Homes, and Boarding Homes. (Definitions of the type of homes are found in the appendix). Medicare and Medicaid do not reimburse for residential care as would be given in a domiciliary nursing home or a boarding home. They do reimburse for intermediate care provided by some practical homes and some professional II homes and for skilled care as given in some professional II homes and professional I homes. Because of the confusion to consumers which results from the classification system, it is unacceptable. However, the most significant flaw in Missouri's classification system lies with the boarding homes and domiciliary homes which provide essentially the same type of service to their residents but are regulated by differing licensing structures. While domiciliary homes are regulated by the nursing home licensing structure, boarding home licensing is separate and much less stringent. According to the Senate Health Care Committee Report:

"Conditions for residency are clearly restricted to those who do not need nursing care. However, the current law establishes no state requirement regarding fire safety, sanitation, housing, or zoning. In these areas, a boarding home must only

conform to existing local ordinances. An official state surveyor is authorized only to determine whether a resident is capable of caring for himself in that protective environment. If deficiencies are observed, a surveyor can only suggest possible changes and at best hope that they are made. Although the majority of licensed boarding homes are adequate, the Bureau of Boarding Home Licensure estimates that there at least 25 inadequate facilities . . . There is little that the state can do."¹³

Problem Description

Availability

In terms of inpatient beds, the state would appear to have an adequate number. Statewide need determinations compiled from nursing home bed needs assessments by individual HSA's indicate that much of the state is overbedded. Unfortunately, the issue of availability is tied to issues of cost, reimbursement, and quality. Consumers may still find themselves with a restricted choice of facilities in spite of the overbedding situation.

Accessibility

The problem of too few beds being Medicare or Medicaid certified is multifaceted; the Missouri Medicaid reimbursement rate, the private pay market, the numbers of non-conforming beds, and the certification requirements all impact upon the problem. To ensure an appropriate supply of Medicaid beds is difficult at best. Once a facility is constructed and approved to provide Medicaid services and then later declines to provide or recertify itself, as such, the State has no recourse. In fact, the result could be an increase in the number of excess nursing home beds as the additional Medicaid certified beds are lost to the total nursing home bed complement. Under present law and state policy, it cannot be guaranteed that Medicaid certified beds will remain in the program.

Continuity

Better case management of patients, particularly state patients, is needed to ensure that their care is at the appropriate level.

Quality

Coming to grips with quality requires the examination of many factors; these include: a tougher licensure law, receivership authority of the Department of Social Services, the training of nursing home staff, the adequacy of inspection personnel and resources, and the nursing homes'

own resources. It can be assumed that the majority of 'non-conforming' beds are located within older facilities and because of grandfather clauses, will continue to remain in operation. However, strategies for their eventual upgrading should be formulated.

Cost

The passage of Certificate of Need and the continuing emphasis upon alternatives to institutionalization are the basis for development of strategies for the eventual reduction in escalating costs. However, the aging demographic structure of Missouri's population will result in a rising demand for long-term care.

As a result of state government's attention to long-term care, progress in improving the system of Medicaid nursing home reimbursement has taken place. However, it is clear that the state should begin to gather data and conduct research for eventual transition to prospective rate reimbursement.

Acceptability

Two important aspects of acceptability have been residents' rights and nursing home classification. These major issues could be characterized as quality issues, however, they are also essential to the acceptability of these facilities to their residents. They will both require legislative changes and initially some difficult administrative tasks.

Implementing a program of residents' rights and determining compliance are unclear areas which are often more complex and more a matter of subjective judgment than are standards of safety and health care. Certainly, standards alone cannot ensure that rights are being protected. Grievance procedures must be both effective and yet not be biased against the facility's staff. There are a number of residents' rights bills being proposed, each of which should be examined.

The State of Missouri could assume a new licensing classification which is identical to the federal certification classification in spite of the fact that not all of the facilities within the state are certified for participation in the Medicare and/or Medicaid programs. These proposed licensing classifications are more inclusive and adaptable since they designate facilities by level of care (e.g., Skilled Nursing Facilities, Intermediate Care Facilities, and Residential Care Facilities). Such classification would better serve the needs of both the nursing home consumers and providers in Missouri by being less confusing than the present five-tiered system. The three tiered system is also easier to understand because it is based upon the patient's level of need.

Goals, Objectives, and Actions

GOAL: TO UPGRADE THE QUALITY AND DISTRIBUTION OF LONG TERM CARE FACILITIES IN ORDER TO PROVIDE SERVICES TO PATIENTS IN SAFE, FAMILIAR, AND PLEASANT SURROUNDINGS.

OBJECTIVE 1: By 1983, the total bed capacity of long term care facilities should be in balance with the demonstrated need of each health service area.

Recommended Action 1: Determination of nursing home bed need should be based on criteria developed in the Medical Facilities Plan.

Recommended Action 2: Determination of nursing home demand should be based on consumer choice as to alternatives to institutionalization (day care, home care, etc.).

OBJECTIVE 2: By 1980, all planning for the construction of new long term care facilities should take location into account as an important factor.

Recommended Action 1: Results based on analysis by the HSA's and regional planning commissions should aid in locating nursing home facilities near health and social services, housing, shopping areas, and transportation.

Recommended Action 2: The determination of location should also take into account the plans of local governments and the desires of neighborhoods in which long term care facilities are to be located.

OBJECTIVE 3: By 1980, standards for the physical plant, as well as activities, services, and programs required by Medicare and Medicaid should be considered minimum standards for all new Practical, Professional I and II nursing home facilities. In addition, it is strongly encouraged that these standards be utilized by existing homes in modernization activities.

Note: Case by case deliberation in modernization is indicated.

Recommended Action 1: Nursing homes should be encouraged to develop a complete range of services considered essential for rehabilitation, maintenance of health, and psychological well being.

OBJECTIVE 4: By 1979, all nursing homes not in compliance with minimum licensure standards, applicable to that facility when it was originally licensed, should undertake no modification or expansion unless the project is to correct a violation of the licensure statute, particularly in relation to life-safety codes.

Recommended Action 1: By 1983, the number of non-conforming beds should be reduced by 25 percent.

Recommended Action 2: Nursing homes with non-conforming beds should not be allowed to expand bed capacity unless the additional conforming beds are to replace non-conforming nursing home beds.

Recommended Action 3: A joint policy should be established by the State and the Health Systems Agencies which addresses the need for and desirability of replacing non-conforming nursing home beds.

Recommended Action 4: Under certificate of need, administrative rules should provide for no approval of capital expenditures in facilities which had one or more repeat violations, for the same reason, in its latest state licensure inspection. These rules may not apply where expenditure is required to alleviate the violation.

OBJECTIVE 5: By 1981, each nursing home should have in place a strong quality review system.

Recommended Action 1: All patient records should be supplemented by a written program for each patient including functional, psychological, and behavioral goals.

OBJECTIVE 6: By 1981, it is desired that every nursing home have substantial and direct community involvement in its operations.

Recommended Action 1: Proprietary nursing homes should be encouraged to have an official advisory board consisting of patients, staff representatives, interested citizens, and consumer representatives.

Recommended Action 2: Special programs should be developed by nursing homes accepting terminally ill, mentally ill, and retarded individuals. The Department of Mental Health should assist nursing homes in developing these special programs, particularly for those facilities that accept Community Placement clients.

Recommended Action 3: Unique innovative projects involving local communities should be supported and encouraged by licensing agencies and the SHCC and supported by appropriate funding agencies where cost-effectiveness can be demonstrated.

OBJECTIVE 7: By 1984, all nursing homes should develop long-range plans to be submitted to the State Health Planning and Development Agency (SHPDA).

Recommended Action 1: All plans submitted to the SHPDA should provide a summary of the institution's program goals, service charges and construction requirements, implementation timetables, and a statement of impact on local communities, health facilities, and services.

OBJECTIVE 8: By 1980, no approval should be given to facility proposals submitted by applicants who are currently involved in license revocation proceedings until those proceedings are resolved.

OBJECTIVE 9: By 1983, continuing education and opportunities to upgrade staff skills should be provided for all personnel in nursing homes.

Recommended Action 1: The Division of Health should cooperate with all nursing homes in developing in-service training programs.

OBJECTIVE 10: By 1980, consideration should be given to the training and utilization of now available "para-professionals" in those geographic areas where professionals are not now available. Such a program should be reviewed by 1983 and possible alterations in staffing requirements considered by the state's licensure program.

OBJECTIVE 11: By 1980, at each level of nursing home care, proposed departmental costs to patients in newly constructed nursing homes should be comparable to charges to the patients in currently licensed facilities based on facility size, licensure, geographic location, and type of resident placed. Any variance from the current cost should be reviewed based on the above factors by the health service area where the facility is proposed.

OBJECTIVE 12: By 1980, nursing homes should be encouraged by the appropriate state agencies to develop shared staff, services, and programs with hospitals, other long-term care facilities, health related agencies, and community service organizations.

OBJECTIVE 13: By 1980, the Department of Social Services should identify data needs and sources, research methodologies, and should develop the capability for transition to prospective rate reimbursement by 1982. (Recognizing that moving from our present cost-reimbursement program to a prospective rate reimbursement plan is an evolutionary process.)

Recommended Action 1: Research should be done by the Department of Social Services to determine the viability of an incentive program under the Medicaid Nursing Home Reimbursement plan to encourage more participation in Medicaid by nursing home operators.

III. DAY CARE

Desired System

Availability

Day care for adults has developed into a generic term for a program of care which is less comprehensive than the care in nursing homes. It is also considered to be ideal for the home patient who may use this as the basis of his/her basic health service package. This approach may be particularly appropriate for the patient who needs a multiplicity of health and social services and who would also have a need for social interaction.

Two major models of day care have emerged as a result of the projects to date. One model offers custodial care with a more psycho-social orientation. Although this model is primarily psycho-social in nature, the clientele are usually suffering from such serious impairments that it is not in their best interests to be left alone all day. The other model emphasizes medical care and it provides therapeutic services for more highly impaired individuals. Both types of day care should be available in Missouri in order to provide for consumer choice.

Accessibility

For the implementation of these models, flexible, multi-phasic financing is needed. Ideally, Title III of the Older Americans Act monies could provide developmental funds, with Title XX of the Social Security Act monies used more appropriately for psycho-social models, and with Title XIX (Medicaid) reimbursement for use within the medical models. Title VII of the Older Americans Act monies could provide meals. Furthermore, any day care project must be accompanied by transportation arrangements for the clients. Transportation and reimbursement represent the greatest barriers to the utilization of day care services.

Cost

The implementation of day care services requires careful planning to ensure that costs and barriers to accessibility do not discourage consumer use.

Quality*

Acceptability*

Continuity*

Comparative Analysis

Availability

Two current projects are presently in various stages of development in St. Louis. They are to be financially assisted with local government funds. Such stable funding increases the likelihood of their success. In addition, nursing homes in the state offer day care services. It would be desirable to have a demonstration project in a rural area of Missouri.

Accessibility

There is nothing of a statutory nature nor anything in the Federal Regulations that prohibit the use of Title XIX monies for day care reimbursement. The use of Title XIX money for day care has, in the past, been a debated topic but a "Federal interpretation of outpatient hospital services to include medical day care" was released on January 22, 1976 with the intention of encouraging "alternatives to more costly long term institutional care."¹⁴ However, in Missouri's Medicaid Program, day care is not a covered service. Limited Title XX reimbursement for day care, for adults is being made, however. Day care is defined in Title XX's 1978-1979 plan as follows:

"The purpose of day care for adults is to provide care on a regularly scheduled basis to relieve the caretaker-relative of the responsibility for supervision of the individual or to allow the caretaker-relative to pursue employment or training. Day care for adults is the provision of care, supervision, and structural activities for adults 18 years or older in a protected group setting for a portion of a 24 hour day. Basic activities include personal supervision, meals provision, personal care, ensuring social interaction and providing mobility assistance, as needed. In addition, adult day care also may include the administration of medication and the provision of organized social, recreational, developmental, and/or educational activities."¹⁵

At present, these Title XX monies are used to reimburse day care for mental health patients. However, nothing in the definition precludes its use for a psycho-social day care model for geriatrics. When a therapy based model is used, Medicare will reimburse for the therapy services.

Cost

Future editions of the State Health Plan will analyze the cost effectiveness of services provided by day care in comparison to home health and nursing home care. The lack of cost information hinders the determination of the relative cost effectiveness of the delivery system for clients with similar impairments.

Quality*Acceptability*Continuity*Problem DescriptionAvailability

Barriers to reimbursement, the need for coordinated transportation services, consumer unfamiliarity, and service availability are key issues in day care. Overall, experiments with this type of care have lacked support due to inadequate funding.

Accessibility

If the day care setting is to be successful, barriers to reimbursement must be lifted. Reimbursement waivers might be sought for certain projects for the purpose of experimentation and for more experience with the day care system. Based upon that experience, reimbursement might be made permanent in the future for projects with the appropriate qualifications.

Cost

As stated in Accessibility, future editions of the State Health Plan will present cost comparative information.

Quality*Acceptability*Continuity*Goals, Objectives, and Actions

GOAL: BY 1984, THE NUMBER OF DAY CARE PROJECTS SHOULD BE INCREASED. DATA SHOULD ALSO BE COMPILED AND EVALUATED IN ORDER TO DETERMINE SERVICE COST EFFECTIVENESS.

OBJECTIVE 1: By 1983, three additional experimental day care centers for the aged should be developed in Missouri.

The three projects should be varied in locality, in setting, and in services. They should provide basic services such as nursing, recreation, at least one therapy program, social services, and dietary services.

It is also recommended that these projects include data collection and evaluation mechanisms developed to assess the structure, financing, and patient care outcomes.

ENDNOTES

¹Carol Schlef, "Report to the Department of Health, Education, and Welfare on Research into Alternatives to Nursing Homes," (Jefferson City, 1978) p. 6.

²John Byrne, "Summary of National Association of Home Health Agencies' Position on Certificate of Need," Statement Presented to the Missouri Senate Sub-Committee on Public Health, Welfare, Consumer Protection, and the Environment, (October, 1977).

³Carol Schlef, op.cit., p. 3.

⁴Carol Schlef, op.cit., p. 4.

⁵Carol Schlef, op.cit., p. 6.

⁶William Hefferman, Susan Elder, and Paul Lasley, "An Evaluation and Documentation of the Strategies Employed to Become an Established and Self-Sufficient Agency to Serve the Needs of the Elderly in Osage, Cole, Moniteau, and Cooper Counties," (Central Missouri Area Agency on Aging, July 1, 1976) p. 26.

⁷Missouri Council for Homemaker Services, "Survey of Hospital Social Services Departments," (Rolla, 1978) p. 2.

⁸National League for Nursing, "Proposed Model for the Delivery of Home Health Services," Publication No. 21-1550 (New York, 1974) p. 2.

⁹Allan Chase, The Biological Imperatives: Health, Politics, and Human Survival, Holt, Rinehart, and Winston, (New York, 1971) p. 125.

¹⁰Missouri State Center for Health Statistics, unpublished data, (1977).

¹¹Missouri Senate, "Report of the State Health Care Committee on Nursing and Boarding Home Licensing in Missouri," (Jefferson City, 1978) p. 1.

¹²Ibid., p. 19.

¹³Ibid., p. 21.

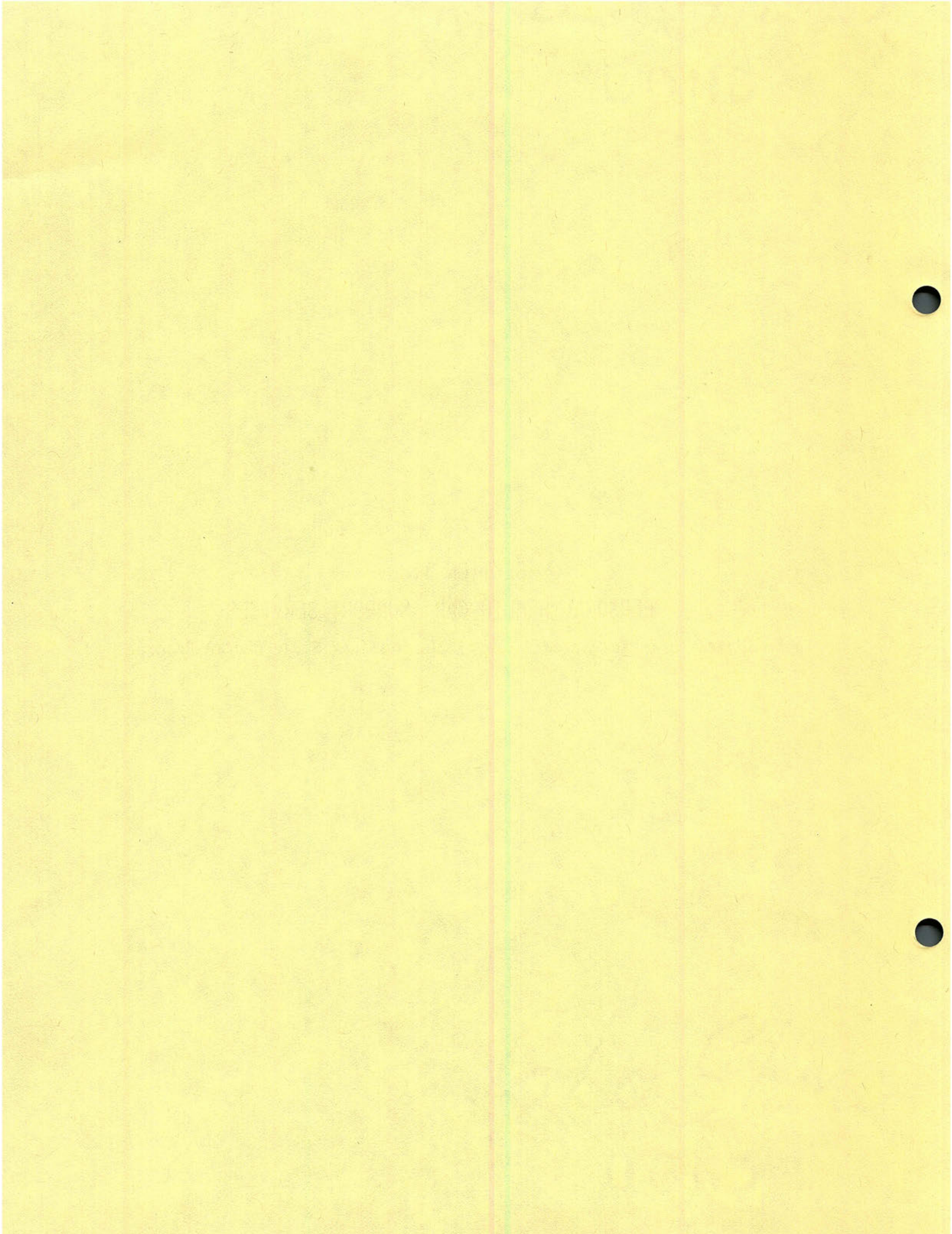
¹⁴Greater St. Louis Health Systems Agency, "Illinois and Missouri Medicaid Programs - An Analysis," Provisional Draft (St. Louis, 1978), p. 49.

¹⁵Missouri Division of Family Services, "Final Comprehensive Annual Social Services Program Plan, Program Year July 1, 1978 to June 30, 1979," (Jefferson City, 1978), p. 33.

SECTION 3.8

PERSONAL HEALTH CARE SUPPORT SERVICES

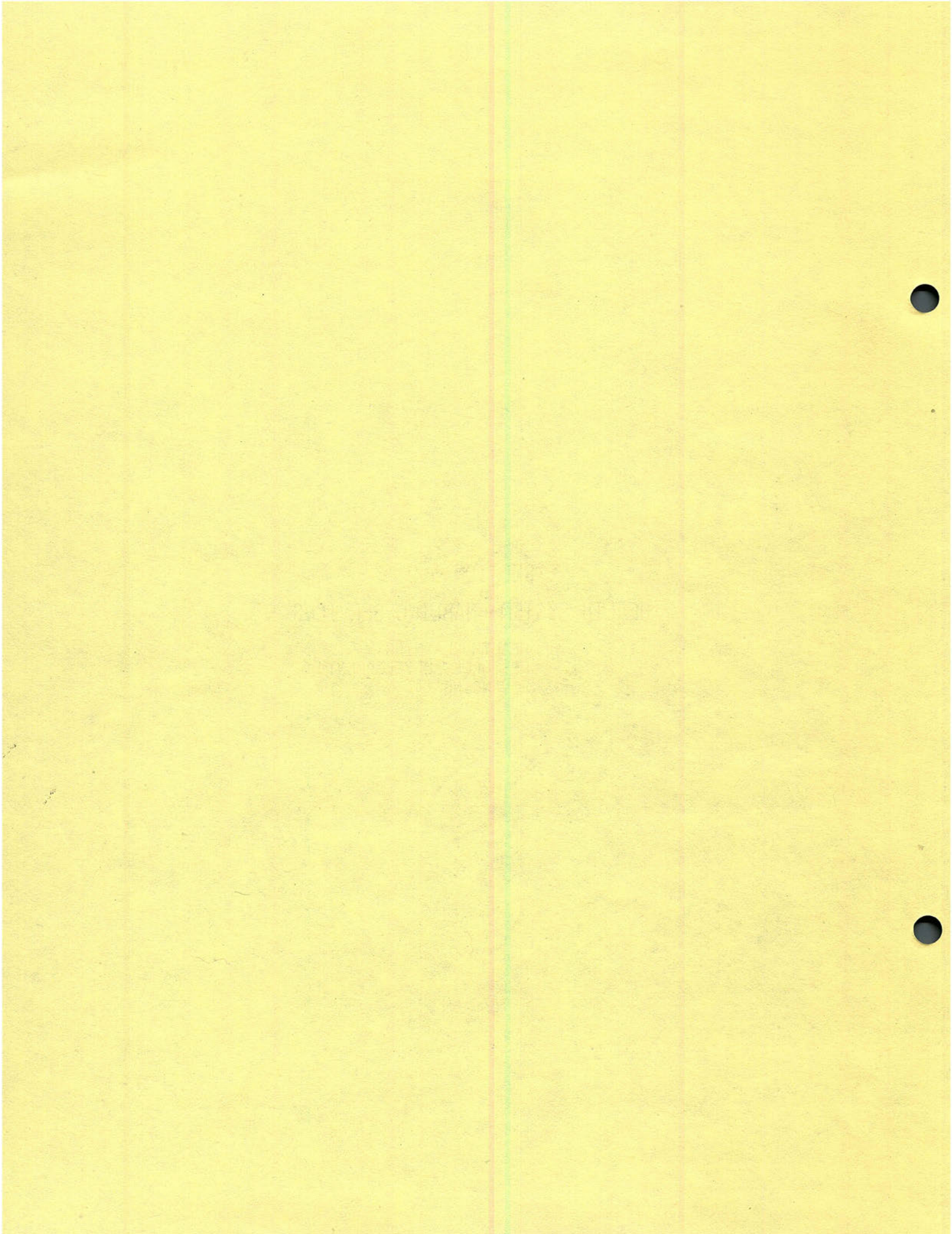
To be addressed in future editions of the Missouri State Health Plan.



SECTION 3.9

HEALTH SYSTEM ENABLING SERVICES

HEALTH PLANNING
RESOURCES DEVELOPMENT
FINANCING



I. HEALTH PLANNING

INFORMATION FOR HEALTH PLANNING

Desired System

The development of a comprehensive and flexible computer-based information system to assist individuals involved in health planning and project review is essential. As more and more emphasis is given to the preparation of health systems plans and implementation strategies, to the development of criteria and standards for project review, and to the projection of future requirements of the health care system, there is an increasingly urgent need for an efficient information system.

The variables in this information system must allow planners, policy-makers, consumers, providers, and decision makers to address the following issues about health care resources -- what they are, who uses them, how much is being spent, and what are the benefits derived. This information system, as with any system, should be flexible enough to change and adapt as the environment in which it is being used changes. The purpose of this system is to provide a mechanism through which data can be efficiently stored, retrieved, presented, and analyzed.

The system should be designed in such a manner that, when data gaps are identified, the capability exists to expand and produce statistical information to complete these gaps. A continuous program for improving data and statistical methods must be incorporated into the system. This requires a program which is dynamic and flexible with the capacity to adjust to changing conditions and changing needs. In relation to each of the data efforts, the statistical service should be descriptive, evaluative, and monitorial.¹

Comparative Analysis

While a good information system will never be able to guarantee good health planning, a poor information system does ensure poor health planning. In recognition of this, P.L. 93-641 is very explicit about the minimum issues on which health systems agencies are required to assemble and analyze data:

1. The status (and its determinants) of the health of the residents of its health service area;
2. The status of the health care delivery system in the area and the use of that system by the residents of the area;
3. The effect the area's health care delivery system has on the health of the residents of the area;
4. The number, type, and location of the area's health resources including health services, manpower, and facilities;
5. The patterns of utilization of the area's health resources; and

6. The environmental and occupational exposure factors affecting immediate and long-term health conditions.²

Much of the information necessary to address these issues is either not available, in the wrong form, not timely, or inaccessible for varied other reasons. Capabilities for analyzing what is available are often lacking

Problem Description

Before a comprehensive information system can be implemented, basic data need to be collected which are uniform, complete, pertinent, and detailed. A priority consideration in the development of a data system for health planning is the implementation of a uniform reporting mechanism for hospitals. There is a need to minimize the expensive burden imposed by duplicative reporting of information by hospitals to various users. A single set of data should be developed which would serve multiple users. To facilitate planners and decision makers in determining the probable results of any intervention strategy, information must be supplied that is concerned "not only with hospital financial data, i.e., historical and projected costs and volumes of activity, but also with the linkage of such data with information on the service complexity of hospitals, their physician mix, their utilization patterns (patient origin and discharge data), the diagnostic and age characteristics of their patients, and with population-based statistics."³

In order to address the accountability issue, information is also needed on health care expenditures within Missouri. To answer questions regarding the benefits derived from expenditures on health care, information on the volume of expenditures, the type of expenditures, the type and distribution of health resources, the utilization of services, health status, and source of funds is required.

Goals, Objectives, and Actions

GOAL: TO ENSURE THE AVAILABILITY AND ACCESSIBILITY OF A COMPREHENSIVE AND FLEXIBLE COMPUTER-BASED INFORMATION SYSTEM.

OBJECTIVE 1: By 1982, a uniform and comparable data reporting system for all hospitals in Missouri should be developed.

Recommended Action 1: By 1981, all hospitals within Missouri should have agreed upon a common reporting form (either Medicare or some other similar form).

Recommended Action 2: By 1981, all hospitals within Missouri should have entered into an agreement to utilize a uniform reporting mechanism to collect a minimum set of information.

Recommended Action 3: By 1979, planning agencies under P.L. 93-641 should coordinate efforts to develop a common reporting request form for hospital discharge data.

Recommended Action 4: The Missouri Health Data Corporation should act as the collector of data and guarantor of confidentiality.

ENDNOTES

¹"Computer-Based Information System," Missouri Health Manpower Linkage Project (June 1976), p. 1-4.

²Public Law 93-641, National Health Planning and Resources Development Act of 1974, Section 1513.

³Katharine G. Bauer, Improving the Information for Hospital Rate Setting, Final Report DHEW Contract #600-75-0142 (Boston: Harvard University, Center for Community Health and Medical Care, September, 1976), p. 3.

II. RESOURCES DEVELOPMENT

ISSUES IN HEALTH MANPOWER

Introduction

Health manpower refers to all individuals engaged in a wide spectrum of activities associated with the provision of health care. These activities are provided in a variety of settings (e.g., hospitals, nursing homes, private offices, industry, educational institutions) and require diverse levels of education (extending from a few days of on-the-job training to several years of professional education plus specialty training.)

"The 'need' for medical personnel depends on the demand for medical services and on the quality of services a given amount of personnel can and is prepared to offer. Both the demand and the supply change over a period of time. The former is affected as the health and socio-economic characteristics of the population alter, as research in medicine advances, and as government helps transform medical needs into demands by instituting new medical services or financing programs. The latter changes as new patterns of medical organization come into being, as new types of personnel are trained and new technology is developed, and as the productivity of personnel changes."¹

Desired System

Within the health care delivery system, a continuum must be developed in which the development, maintenance, and distribution of appropriate skills and numbers of health care personnel adequate to serve the population are provided. The services provided by these professionals should be accessible as measured by availability of services, the ability of an individual to obtain services, and the comprehensiveness of services offered.

"Ideally, manpower resources should be a derivative function of health services needed to achieve specified health goals and those in turn translated into manpower requirements."² However, estimates of manpower requirements cannot be addressed in isolation; they must be integrated with other facets of the health care delivery system. A mechanism should be developed which permits local identification and translation of health service requirements into corresponding manpower requirements. In order to do this, an understanding of the functioning of the health care delivery system is needed. It must also be understood that the demand for medical services is really a demand for the elusive commodity 'better health.' When analyzing the need for a given type of service, all levels of providers contributing to that service must be considered if a more efficient mechanism is to be determined.

When analyzing health service requirements, emphasis should be placed on the most economical way of providing the specified level and quantity of services. In order to utilize a given pool of manpower with reasonable efficiency, consideration must be given to the productivity and cost of the factors involved. There are several possible methods for reducing costs:

"One way is through substitution of equipment for additional manpower: Given the costs of manpower and equipment, is it economical to use an auto-analyzer instead of additional laboratory personnel? Another approach is through task delegation, to economize on the use of the scarcer, more costly manpower by delegating less exacting tasks to less costly personnel as far as is consistent with good medical practice, thus increasing the effective supply of services by the more expensive types . . . Productivity increases may stem from technological advances as well as from the realignment of tasks. In fact, these two factors often go hand in hand."³

When considering the possibility of task delegation, consideration must be given to the qualifications of the personnel, their legal basis for performing services, and public and professional acceptance of auxiliary personnel. One such type of auxiliary primary care provider is the physician assistant. This provider should be trained (and have the legal basis) to perform high quality primary care without the physician's presence in the same room, although the physician should be present on the premises. By handling the more routine tasks, the physician assistant can free the more highly trained physician for more complicated tasks.

Comparative Analysis

The fundamental problems facing the health care delivery system with respect to health manpower are the provision of the right number of personnel of the right kind in the right place. In recent years, numerous attempts, resulting in a wide variety of conclusions, have been made to determine the adequacy of the supply of health manpower and the corresponding services. A basic reason for this wide disparity in views concerning the adequacy of the manpower supply is that no universally accepted theoretical framework has been developed. Therefore, when comparing the results obtained by various authors, all assumptions must be considered as well as the theoretical framework and models used.

It is generally agreed that a problem exists in American health care. The problem, however, is not simply one of numbers of manpower. Additional manpower may be needed over time to meet the changing demands of the population; but if additional personnel are employed in the present manner and within the present patterns and 'systems' of care, they will not alleviate the current problems and may, in fact, compound them. "Unless we improve the system through which health care is provided, care will continue to become less satisfactory, even though there are massive increases in costs and numbers of personnel . . ."⁴

During 1977, there were over 175 education programs in Missouri providing training for more than 60 different health occupations.⁵ In spite of this, there are still difficulties with distribution and utilization of

health manpower services in Missouri. There are certain areas within the inner cities and in rural Missouri that are medically underserved.

For a three year period ending in June 1977, a Health Manpower Linkage Project was conducted which analyzed the requirements for health manpower within Missouri. This project looked at the health professional groups of dentists, pharmacists, physicians (M.D. and D.O.), podiatrists, optometrists, nurses, and veterinarians, as well as a few selected groups of allied health personnel closely associated with these professional groups. An attempt was made in these studies to determine the overall need for additional manpower within Missouri and to determine areas within the state that were currently experiencing a shortage of manpower services. In general, it was found that Missouri, like the rest of the United States was experiencing problems with distribution and utilization rather than one of overall shortages.⁶

One possible method for easing these problems is the utilization of physician assistants. While there are many types of physician assistants working in the United States, they can usually be categorized into the following three levels which are distinguished by the nature of the service each level is best equipped to render and the amount of medical knowledge and judgment required:

"The Type A assistant is capable of approaching the patient, collecting historical and physical data, organizing these data, and presenting them in such a way that the physician can visualize the medical problem and determine appropriate diagnostic or therapeutic steps. He is also capable of assisting the physician by performing diagnostic and therapeutic procedures and coordinating the roles of other, more technical assistants. He is distinguished by his ability to integrate and interpret findings on the basis of general medical knowledge and to exercise a degree of independent judgment.

The Type B assistant, while not equipped with general knowledge and skills relative to the whole range of medical care, possesses exceptional skill in one clinical specialty. Because his knowledge and skills are limited to a particular specialty, he is less qualified for independent action.

The Type C assistant is capable of performing a variety of tasks over the whole range of medical care under the supervision of a physician, although he does not possess the level of medical knowledge necessary to integrate and interpret findings. He is similar to a Type A assistant in the number of areas in which he can perform, but he cannot exercise the degree of independent synthesis and judgment of which Type A is capable."⁷

While Missouri does not currently have legislation dealing with the utilization and role of physician assistants, forty-one other states have such legislation which is primarily of two forms: general delegatory or regulatory authority. General delegatory legislation consists of an amendment to the medical practice act of that particular state which permits

physicians to utilize these assistants under their supervision and control. In other words, individual physicians have sole responsibility for delegating the functions which will be performed by this individual, based on the physician's assessment of that individual's capabilities. States which have enacted regulatory authority statutes appoint an organization within the state, usually the State Board of Medical Examiners, as the responsible agent for the registration and regulation of physician assistants.

Since Missouri does not have enabling legislation which defines the roles and legal responsibilities of physician assistants, few practice within the state (in 1975 there were only 37).

Problem Description

The three most important issues in an analysis of the health manpower area are: the supply, the geographical distribution, and the specialty distribution of the health manpower. "Many manpower experts feel that absolute supply is no longer an important issue in many or most types of health manpower, but that the issues are geographic and specialty distribution of the currently available manpower. While this may be true, it is still necessary to have a reasonable grasp of the current and projected supply situation in order to approach the other issues in an intelligent manner."⁸

When planning for the requirements of health manpower, however, it must be recognized that it is wasteful to provide for manpower that will be unused. Not only should consideration be given to the 'needs' of the population, but also to their ability and 'wants' concerning utilization of services. When estimating requirements for health manpower, several related health occupations should be analyzed together rather than singularly. Such a strategy will allow a greater consideration to be given to possible substitutions and complementarity among manpower categories. A specific program of health services can be provided by alternative combinations of personnel and facilities.

An essential element in an evaluation of the adequacy of the supply of health manpower is an inventory of that supply. Although improvements are being made, many problems exist today in obtaining relevant, reliable data on most health manpower occupations. Unless the occupation is licensed, it is virtually impossible to obtain even a head count on active personnel. Another area where information is almost nonexistent is on the 'pool' of potential personnel, that is, those who are trained but not active and might be persuaded to re-enter the market under certain circumstances.

In general, national health manpower policy has relied almost exclusively on educational strategies designed to increase the supply of personnel. A shortcoming of such a strategy is that emphasis is placed on means rather than ends (manpower rather than services) and ignores alternative methods of delivering health care services induced by manpower

substitutions and technological changes as well as alternatives to the use of such services per se. The fundamental issue here appears to be an imbalance between desired and observed patterns of manpower utilization.

One alternative, the employment of physician assistants by primary care physicians, can have an impact on the level and cost of health care being provided. In a survey conducted by the United States General Accounting Office, it was noted that the employment of a physician assistant increased the number of patients served, as well as freed the physician to spend more time with each patient and to handle the complicated cases.⁹ Other studies have been undertaken which show that a physician assistant can increase the productivity of a primary care physician from 30 to 80 percent, depending upon their method of utilization and practice.

Finally, it is important to recall that health manpower is not a goal in itself but a means for providing services to a population. These services should be provided to the extent that they make a worthwhile contribution to the health of the population.

Goals, Objectives, and Actions

GOAL: TO ENSURE THE DEVELOPMENT, MAINTENANCE, AND DISTRIBUTION OF APPROPRIATE SKILLS AND NUMBERS OF HEALTH CARE PERSONNEL ADEQUATE TO EFFECTIVELY AND EFFICIENTLY SERVE THE POPULATION.

OBJECTIVE 1: By 1983, the distribution of manpower services should be improved so that services are more readily available and accessible in a cost-effective manner to 50 percent of the areas designated as underserved by the Department of Health, Education, and Welfare (DHEW).

As stated in the reports prepared by the Missouri Health Manpower Linkage Project, State Health Planning and Development Agency (SHPDA), recommendations were made for improving the health care services in Missouri. While many of the recommendations were for a particular manpower group, a central concept among all groups appeared. The recommended actions which follow are basically derived from these reports:

Recommended Action 1: By 1980, efforts should be made by the State Health Planning and Development Agency (SHPDA), the Health Systems Agencies (HSA's), and the professional associations to establish a statewide placement service which would contain information on shortage areas and a current list of available practices and practitioners who are seeking associates and/or partners. Community profiles on areas requiring professional services should be available to any practitioner seeking a practice location.

Recommended Action 2: Individual communities within an area identified as having a shortage of health care services should consider the following alternatives in attracting practitioners to the area: providing financial aid to students; paying travel expenses for the potential candidate to view the community; providing for overhead expenses incurred in establishing a new practice in the community; and/or making arrangements to guarantee a new practitioner a specified income during an initial period.

Recommended Action 3: By 1980, the legislature should enact a regulatory authority bill pertaining to physician assistants.

This legislation should define a physician assistant (Type A) as an individual who is:

- A. Board eligible (and/or certified) as a graduate of a formal, accredited Type A physician assistant program;
or
- B. Board certified and whose eligibility to sit for the examination was based on practical experience as set forth in the following criteria:
 - 1. High school diploma or equivalent certificate;
 - 2. Four years of medical clinical experience in primary care as a physician assistant since January 1, 1979 (this experience must be within the United States or the United States Armed Forces); and
 - 3. Meet specified criteria concerning the nature of work experience.

The national certifying examination for assistants to the primary care physician is designed to assess the candidates' knowledge and competency in applying that knowledge to the clinical problems and conditions prevalent in the primary health care setting.

This legislation should allow the physician assistant to practice without the actual visual supervision of the physician. While the presence of a physician on the premise is desired, to require the physician assistant to work within the visual presence of the physician would sharply curtail the potential effectiveness of the auxiliary personnel. It is not the intent to initiate legislation which would enable a physician assistant to establish a private practice, but only to legally define the roles and responsibilities of physician assistants to assist physicians.

Recommended Action 4: Modification of the present health care delivery system should take into consideration such factors as:

- a. Satellite clinics in rural and urban underserved areas staffed by rotating primary care physicians, physician assistants, and nurse practitioners.
- b. Direct incentives to groups of physicians in established practices to expand their services to the surrounding underserved areas.
- c. Organize specialty support systems statewide for family practitioners in isolated areas. All family practitioners in isolated areas should have direct telephone service to medical centers in the state for immediate consultation with specialists.
- d. Possible revisions in medical and osteopathic school admission policies to place more emphasis on placing students in the inner cities and rural areas.

Recommended Action 5: Any new or additional state and federal monies to subsidize residents should be awarded to medical and osteopathic schools in Missouri who desire to increase residencies in the primary care specialties, especially family practice.

Recommended Action 6: By 1981, the State Health Plan should include an analysis of the adequacy of the numbers and distribution of health practitioners (to be repeated periodically) in order to monitor changes in the health care delivery system.

Even if an ideal staffing pattern for the delivery of services to a community, area, or state could be envisioned at this time, the continuing development of new knowledge and techniques, new patterns of services, and new methods of payment are all constantly changing the requirements for both the numbers and varieties of health manpower.

ENDNOTES

¹Rashi Fein, The Doctor Shortage: An Economic Diagnosis, (Washington, D.C.: The Brookings Institution, 1967), p. 22.

²Robert F. Knouss, "Health Manpower -- The Right Kind", Health Manpower Issues -- A Presentation at the White House (November 13, 1975), p. 19.

³U.S. Department of Health, Education, and Welfare, Methodological Approaches for Determining Health Manpower Supply and Requirements, Volume 1 -- Analytical Perspective, DHEW Publication No. (HRA) 76-14511 (1976), pp. 66, 70.

⁴Report of the National Advisory Commission on Health Manpower, Volume I, (Washington, D.C.: Government Printing Office, November 1967), pp. 2-3.

⁵Patrick Hurley, Selected Health Occupations -- Educational Programs in Missouri, 1977, State Health Planning and Development Agency, Health Manpower Planning, (April 1977), p. i.

⁶For further information see the Missouri health manpower analyses reports on the seven professional categories prepared by the Health Manpower Linkage Project staff during 1975-1977.

⁷National Academy of Sciences, Ad Hoc Panel on New Members of the Physicians Health Team, "Report on Physician Assistants," (May 1970), pp. 10-12.

⁸John C. Dalton, "Equal Access to Health Care -- The Manpower Issues," Health Manpower Issues -- A Presentation at the White House (November 13, 1975), p. 6.

⁹U.S. Congress, General Accounting Office, Progress and Problems in Training and Use of Assistants to Primary Care Physicians, MWD-75-35 (April 8, 1975), p. 33.

¹⁰National Academy of Sciences, op.cit.

III. FINANCING

INFLATION IN THE COST OF HEALTH CARE SERVICES

Desired System

The level of price inflation of health care services should not exceed the level of general price inflation. By analyzing the relative level of inflation, contributing conditions specific to the health care industry can be identified:

"People are concerned about the relative price growth for at least two reasons. First, it represents a redistribution of income to the providers of health care services away from the providers of all other services in the economy. Second, lower income families spend a higher percent of their income on medical care. An increase in its relative price will have a disproportionate impact on the poor."¹

The proposed solutions to the problem of spiraling cost inflation in health care services fall within three broad categories: 1) improve the market to more closely resemble efficient markets in other sectors; 2) compensate for the poor market structure through planning and public utility-type regulations; and 3) replace the economic market with a political market by nationalizing the industry.

Comparative Analysis

"In the past twenty-four years, the price of medical services has gone up 1.5 times as fast as the consumer price index."² As a result of this unrelenting spiral in the cost of health care services, consumers must purchase a relatively smaller basket of other goods and services. While a variety of articles have been written on the cause of inflation and potential solutions to it, several basic structural defects are, in general, recognized as major contributors to health care cost inflation:

1. Fee-for-service and cost-plus reimbursement neither encourage nor reward cost containment, and in fact, encourages cost growth;
2. Historically, methods of third-party reimbursement provide little or no controls over rising prices;
3. Insufficient competition exists within many segments of the health industry, so that market forces that exist in other sectors to induce increased productivity and efficiency are largely absent in the health care sector;
4. First-dollar insurance coverage reduces cost-consciousness on the part of consumers;
5. Consumers lack the required knowledge to enable them to become aggressive, informed purchasers of health care;³ and

6. Consumer expectations as to the capability of modern medical technology have risen and may be inflated.

The presence of any or all of these structural defects leads to substantial wastes in the health care delivery system through unnecessary hospitalization, over expansion of facilities, and the over utilization of various services. At the same time, however, because of financial barriers and/or the maldistribution of resources, some individuals are unable to gain access under the current system.

Problem Description

The rapid rate of inflation in the price of health care services limits the nation's flexibility in choosing alternative expenditures. In order to curtail the rapid rise in health care costs, a comprehensive long-term strategy for altering the structure and functioning of the system needs to be developed. Three methods for controlling costs have been proposed:

1. ...reorient physicians and other health care providers to change their behavior -- to use less costly modes of delivering services, particularly preventive and ambulatory services, to use nurse practitioners or physician assistants, and to change incentives of present reimbursement systems to increase cost consciousness among providers of care;
2. ...restructure the financial incentives faced by providers through techniques such as prospective reimbursement, influence the allocation of scarce health resources (particularly capital expenditures), and improve the geographic distribution of health manpower and other crucial health resources through improved health planning at the state and local level; and
3. ...educate the consumer to use the health care system more appropriately and effectively and to emphasize prevention and positive health maintenance.⁴

Goals, Objectives, and Actions

GOAL: TO ENSURE THAT THE LEVEL OF MEDICAL PRICE INFLATION DOES NOT EXCEED THE LEVEL OF GENERAL INFLATION.

OBJECTIVE 1: By 1983, changes within the total market structure of the health care system should be implemented which will lower the level of medical price increases so that it is no more than 1.25 times the level of general price increases.

Recommended Action 1: By 1980, an educational strategy should be initiated to provide consumers with more information about the structure of the health care market and prices within the system.

Recommended Action 2: By 1981, a study should be conducted analyzing the feasibility of prospective rate reimbursement for hospitals.

Recommended Action 3: By 1981, a prospective rate reimbursement mechanism should be implemented for nursing homes.

Recommended Action 4: By 1981, changes in the methods of third-party reimbursement (i.e., first dollar coverage) for health services should be researched and appropriate action implemented.

Recommended Action 5: By 1981, a study describing the benefits and costs of rate regulation/review should be conducted.

Recommended Action 6: By 1980, a study describing the strengths and weaknesses of utilization review should be conducted.

ENDNOTES

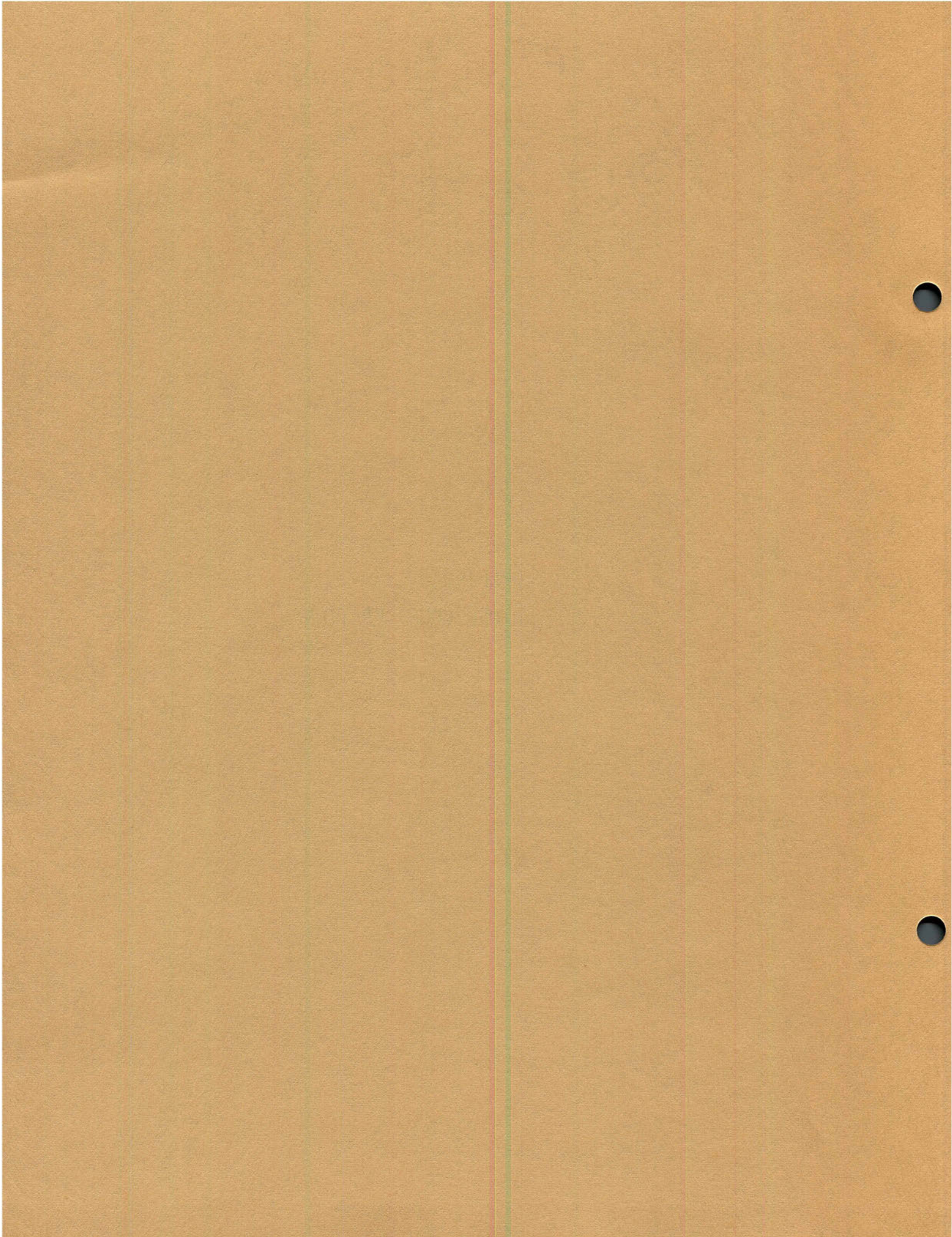
¹Theodore R. Marmor, Donald A. Wittman, and Thomas C. Heagy, "Politics, Public Policy, and Medical Inflation," Michael Zubkoff (ed.) Health: A Victim or Cause of Inflation (New York: Prodist, 1977), p. 301.

²Ibid., p. 299.

³Michael Zubkoff, "Health Report to the White House Summit on Inflation," Michael Zubkoff, (Ed.), Health: A Victim or Cause of Inflation (New York: Prodist, 1977), pp. 1-2.

⁴U.S. Senate, Hearings Before the Subcommittee on Health of the Committee on Labor and Public Welfare, Inflation of Health Care Costs - 1976, (Washington, D.C., 1976).

CHAPTER 4
AREAS FOR FUTURE CONSIDERATION



The Missouri State Health Plan is a dynamic and changing document which must be flexible to respond to changing statewide needs. As time goes on, the plan should increase in comprehensiveness and quality as additional and updated information becomes available and as planning methodologies are refined. It is recognized that this second edition of the Missouri State Health Plan has not fully addressed all health issues raised by the Statewide Health Coordinating Council. However, in a step-by-step analytical method, this will be accomplished on a yearly basis.

Statewide Needs and Priorities

In the coming year a complete reassessment of statewide needs and priorities will be accomplished. The Missouri SHCC in this project year elected to continue to use the original statewide needs and priorities as developed in the first planning year.

Since a number of the original needs and priorities have begun to be addressed at the State and health service area level, there is a distinct need to reassess and reestablish the needs and priorities. The process will be completed by the method outlined in Chapter 1.

Description of the State

Prior to the release of preliminary 1980 census data, annual improvements will be made in the timeliness of certain data. For example, the most recent population projections and vital statistics for the state will be included in annual updates of the plan. In addition, this analysis will be expanded to include further demographic and economic indicators of the composition and structural aspects of the population in the state.

Appropriateness Review

Proposed rules and regulations for appropriateness review, which is the determination of the conformance of existing health services and facilities to a set of criteria and standards, were developed and published in the May 16, 1978 Federal Register. Final rules and regulations have not been published. However, it is projected that those regulations will be forthcoming for this next project year. The SHPDA has agreed with the Missouri HSA's on an appropriateness review schedule to be initiated within the next project year.

Health Status

In revisions of the Missouri State Health Plan there will be an expansion of the health status component beyond present emphasis on mortality. The present data will be reassessed and updated with greater emphasis on comparing trends and identifying root causes for changes in rates. Costs of preventable diseases, injuries, and deaths and their impact on Missouri will be analyzed with respect to the potential health system interventions.

A data base for an environmental health study will be developed concomitantly, and efforts to make cancer a reportable disease will be undertaken. A comparative analysis of health status as it relates to socioeconomic and demographic variables will also be initiated.

Health Status

In future editions of the Missouri State Health Plan, data will be revised, updated, and incorporated in the appropriate sections. As quantifiable indicators are developed, additional components will be incorporated into the appropriate sections. Areas already included in the State Health Plan will be more completely analyzed as additional and updated information and methodologies become available.

The Community Health Promotion and Protection component will be expanded into an evaluation of Health Maintenance Organizations, health education manpower, and a more complete analysis of well person maintenance. Environmental health issues will also be more fully developed and a risk analysis initiated.

An expansion of the Prevention and Detection Services component will evaluate the impact of adult immunizations and assess the possible shortcomings. Detection Services will also be analyzed for the first time.

A more complete analysis and a revision of Diagnostic and Treatment Services will be undertaken. A great deal of the data used in this component must be updated yearly due to the tremendous changes in this part of the health system. In particular, analysis of alternative birth delivery settings will be developed as well as a more extensive analysis of outpatient surgery. The section on Outpatient Services will be expanded to include emergency services and free standing outpatient departments. An analysis of Dental Health Services will also be developed. The entire area of Mental Health is important from both an administrative and planning perspective. Cooperative development of the mental health component with the Department of Mental Health and the five HSA's is planned. The General Medical Services Section will be expanded through proposed cooperative development with the five HSA's. Acute Inpatient Care, in particular, will be reevaluated and the SHCC policy towards the acute care system reassessed. The End-Stage Renal Disease Services section will also be expanded, especially in light of the development of the ESRD network.

Habilitation and Rehabilitation Services will be updated with additional quantitative analysis of hospital based rehabilitation beds. Maintenance Services will also be updated and expanded with further analysis of the appropriateness of hospital and institutional based long-term care beds. Nutrition Services for the aged will also be explored.

The effect of cost on the health system and the development of manpower resources will be expanded under Health System Enabling Services.

Priorities within and among each new section, in addition to all those sections that are to be updated, revised, or expanded will be established as a basis for priority implementation in next year's edition of the State Health Plan.

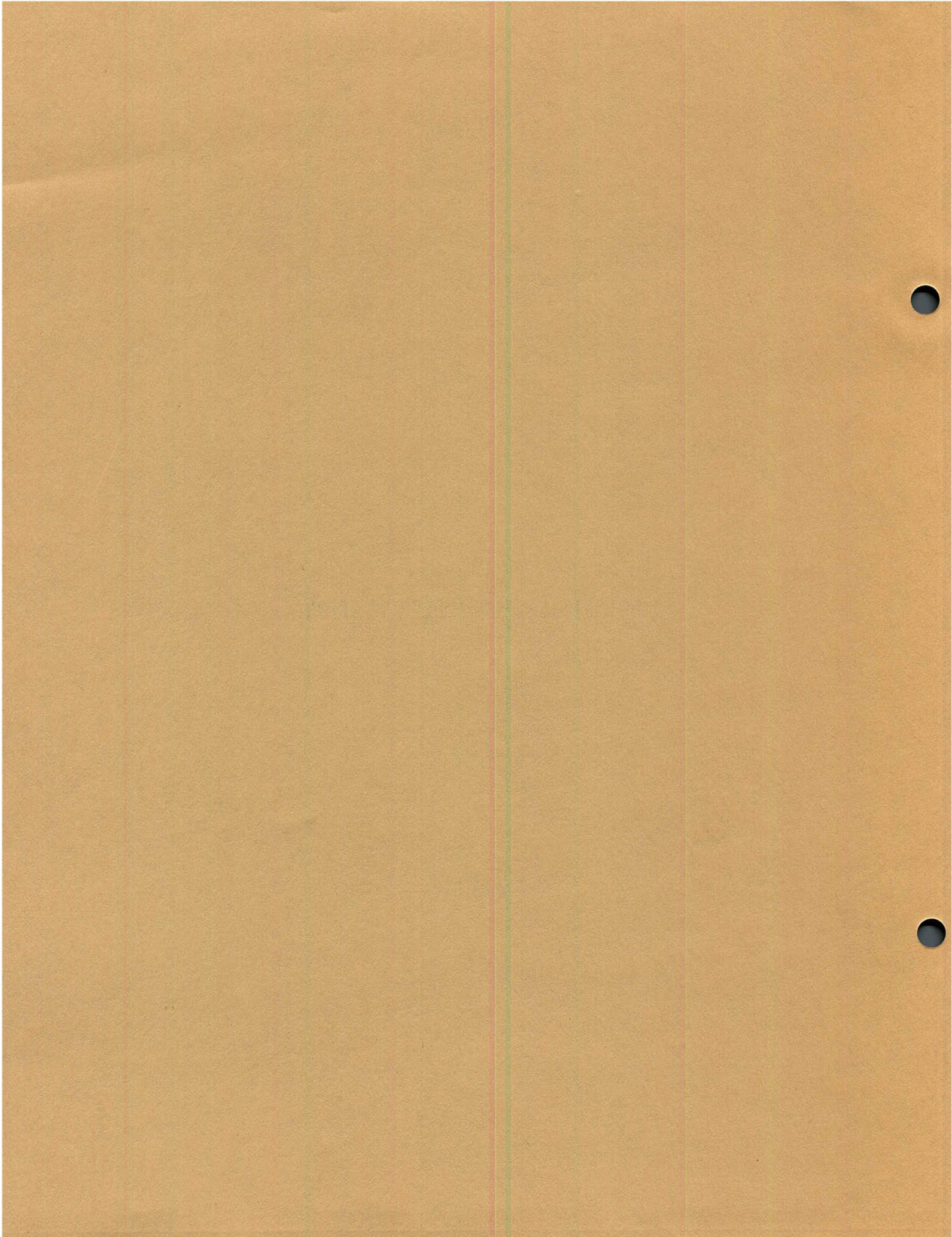
Organization and Management

Improved coordination and communications with the HSA's should be the cornerstone of the next planning effort. There has been sincere effort among all parties to develop a logical method "of doing business." The Missouri SHPDA/SHCC will strive to improve on past efforts and attempt to tap those areas of expertise found among volunteers and professional planners within all the planning agencies in the state. Also, as part of this effort, task forces or advisory groups will be formed to provide leadership to both the staff and the plan development committee in addressing both technical and emotional issues. These groups will be composed of a cross section of experts in the particular field, plan development committee members, and other interested parties.

Public Hearing Comments

Input received from the May 1979 public hearings on the 1979 Missouri State Health Plan will be presented to the SHCC and capsulized in this section of the final printed document.

CHAPTER 5
PRIORITIES FOR IMPLEMENTATION



Priorities for implementation in 1979 are based on the established priority areas as defined by the SHCC in the first project year. These top four priorities with the accompanying potential activities are as follows:

Health Education

1. School health education program development and assistance for local school districts.
2. Promotion of health education in business and industry through better cooperation with both management and labor.
3. Increased support of activities promoting "well person maintenance" including development of wellness centers.
4. Other appropriate actions needed to implement the health education section of the Missouri State Health Plan.

Primary Care

1. Development of a model rural health care delivery system in rural Missouri.
2. Development of an implementation methodology in order to be able to transpose the rural health model to any area of the state.
3. Promote the use of physician extenders and a law to define their use.
4. Provide staff help to the Governor's Rural Health Care Task Force to identify other health problems and implement actions as previously defined.

Mental Health

1. Co-development with the Department of Mental Health of a model mental health care center or system.
2. Co-development of a needs assessment realistic for use by the Missouri HSA's.
3. Continued work with the Department of Mental Health in addressing specific identified problems in alcohol or substance abuse (e.g., fetal alcohol syndrome).

Services for the Aged

1. Promote the appropriate use of generic drugs for health care costs saving.
2. Provide technical assistance in the implementation of nursing home quality reform efforts resulting from legislative mandate.
3. Provide technical assistance to the planning efforts initiated by the new Division of Aging in the Missouri Department of Social Services.
4. Participate in efforts by the Department of Mental Health and other agencies to document and decrease the prevalence of substance abuse and medication misuse, particularly with respect to the aged population.

Other possible areas for implementation activities include the development of a state employees Health Maintenance Organization and development of an environmental health interagency council within the state government.

The Missouri SHPDA is always willing to assist any individual, agency, or organization wanting to implement any part of the approved Missouri State Health Plan.

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